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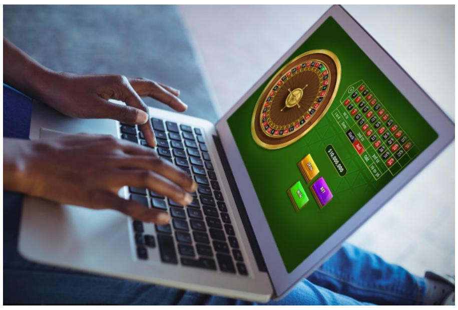
RSPH

The threat of gambling to public health in Ghana: time to act

In this manuscript, Badu and co-authors provide a contemporary picture of gambling and gambling harm in Ghana and argue for a comprehensive public health response to prevent and minimise these. This article works towards expanding the international literature on gambling in low-income countries, which is a global health priority.



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CONTEXT

Like many other sub-Saharan African countries, Ghana has yet to adopt a public health response to the growing threat of gambling and the gambling industry. Currently, there is no national programme aimed at preventing and minimising gambling harm and effectively regulating the gambling industry. The rhetoric from industry and government is centred on 'responsible gambling', which frames gambling and its harms as an issue of personal responsibility and positions the individual as the sole architect of their behaviour.[1] However, as the recent Lancet editorial on the commercial determinants of health has argued, 'commercial actors are diverse and many play a vital role in society, but the products and practices of many are having increasingly negative impacts on human and planetary health and equity'.[2]

The expansion of the gambling industry into sub-Saharan Africa has intensified in the last decade driven by rapid technological advancements and the introduction of tighter gambling regulations in high-income countries.[1] The prevailing weak and outdated gambling regulatory regime across many countries in the region have enabled large transnational gambling brands to adapt their existing platforms to attract new customers and grow their market share, as the industry looks for new sources of profit.[3] At present, there is less research about gambling industry activities and influence on gambling behaviour and harms in sub-Sahara Africa.[4] However, the predatory practices of transnational tobacco,[5] alcohol[6,7] and food[8,9] industries are well documented and offer useful insights into how the gambling industry may be employing similar tactics. These include sophisticated marketing, enhanced corporate imaging through corporate social responsibility, exploitation of the acute need for sponsorships, misconceptions about the gambling industry contribution to employment and revenue for government, alliances with politicians and circumventing weak regulations to drive the uptake of gambling and gambling harm.

The available evidence suggests sports betting may be the most popular gambling activity and poses the biggest threat to the health of children, young adults and vulnerable communities

The primary objective of the gambling industry is to grow and sustain profits for their shareholders, not for the consumers.[10] To achieve their objective, gambling products are aggressively marketed, often to young people, and positioned as a legitimate and enjoyable means to make quick money.[1] Targeting young people is a deliberate tactic of the industry to build future loyalists and consumers of gambling products.[11] Growing profits and market share is therefore at the expense of often the most deprived and vulnerable people in society, and the misconception of revenue generated by the government is built on the impoverishment of people who are predominantly unemployed and living in precarious conditions.[10]

Many gambling activities legally operate in Ghana including lotteries, casinos, horse racing and sports betting.[12] The available evidence suggests sports betting may be the most popular gambling activity and poses the biggest threat to the health of children, young adults and vulnerable communities.[13,14] A strong sporting culture likely fuels the availability of sports betting along with a significant support base for sports (especially European football), high mobile phone use and the availability of a mobile payment system infrastructure, enabling stakes to be placed via phones and wins to be paid promptly.[1,15]

This conducive environment, coupled with weak advertising regulations and poor operator monitoring, has created favourable conditions for the gambling industry to rapidly expand its products and profits at the expense of the public's health and wellbeing, particularly those most vulnerable – children and younger adults.

WHO IS AT RISK AND WHAT ARE THE IMPACTS?

Studies from Ghana have reported common reasons for participating in gambling, including winning money, leisure, socialisation and unmet psychological and social needs.[16,17] While the extent of gambling participation and the prevalence of gambling harm in Ghana are unknown, available studies indicate gambling participation is relatively prevalent among vulnerable groups such as children. For instance, a nationwide study of 5,024 school children aged 8–17 years reported a gambling prevalence rate of 3.1%, with higher rates reported among males.[13] Another study of 1,101 randomly selected in-school adolescents aged 10–19 years living in a rural area reported a problem gambling prevalence of 34.3%, higher among males than females.[14] We anticipate that the consequences of gambling to children, young adults and other vulnerable groups could be far more significant than currently reported.

> **We anticipate that the consequences of gambling to children, young adults and other vulnerable groups could be far more significant than currently reported**

As an activity involving monetary losses and high risks, the consequences of gambling including costs to health and social systems far outweigh the benefits to individuals, their families and communities. Specifically, studies in Ghana have found gambling linked to financial stress (losing money, people incurring debts they are unable to repay, stealing to stake bets), poor mental health and wellbeing (depression, mental instability, sleepless nights), poor academic performance and challenges with personal and social life including family breakdown and crime.[16,18]

WHY IS PUBLIC HEALTH ACTION URGENTLY NEEDED?

A comprehensive public health approach to gambling and its harms is vital and has been framed as twofold.[19] First, it recognises that the drivers of gambling harms result from the interrelationship of commercial, political, economic, social and behavioural determinants.[19] Second, it champions evidence-informed policies and strategies, free from industry influence, that prioritise and safeguard the health and wellbeing of individuals and populations from harm caused by the gambling industry and its products.[19] This framework provides a useful starting point to guide public health action on the prevention of gambling and its harms in Ghana.

We have insufficient data on the profiles of those who gamble or how and what marketing strategies encourage betting in Ghana. While the use of celebrities for alcohol advertising has been banned, this is not the case for gambling. For example, television gambling advertising features prominent Ghanaian athletes, football team shirts display gambling logos, and the gambling industry is currently the headline sponsor of the Ghana Premier League. These tactics have far-reaching impacts on children and young people who see players they idolise normalising these harmful products and perpetuating a new culture of modernity and legal and appealing means of making money.[11] The trend towards rapid gambling uptake will not change unless gambling marketing is effectively regulated with strict enforcement of regulations on advertising material size and placement.[20] In addition, there is a need for evidence-informed, well-resourced social marketing-based public education campaigns to counter gambling advertising and the use of influential sports stars. Examining effective public health strategies previously used to limit the influence of other harmful industries and products will be instructive.

People have a choice in how they spend their money. However, governments can and must play an essential stewardship role in protecting people by creating supportive and safe environments free from the influence and impact of harmful products and industries, particularly children and vulnerable populations. In 2006, Ghana enacted the Gaming Act 2006 (Act 721). The act consolidated all the laws relating to gambling activities (other than lotteries) and established the Gaming Commission to regulate, control, monitor and supervise the gambling operation in Ghana. However, the current law and the commission do not adequately address contemporary gambling issues and contexts, such as online gambling. The law primarily focuses on ensuring fair and equitable participation in the gambling market by gambling operators and with minimal set of protections for people who engage in gambling. It does not set out an overarching objective to protect the public's health nor extends current protections to families, relatives and communities of the people who engage in gambling. Per the Act, the commission is required to report on the number of licences issued and maintain a licence register. However, there is no requirement to produce reports on gambling participation levels, revenues generated or funding disbursed for social responsibility, including research or community development. We argue these should be key mandates of the commission in the current environment. The law and the commission will benefit from a structural review underpinned by public health principles to effectively address the rapidly evolving gambling landscape and its threat to the public's health.

CONCLUSION

We must act on the public health of Ghana now by demonstrating leadership in monitoring industry tactics and exerting pressure on decision-makers to regulate the gambling industry effectively. Emphasis must shift from personal responsibility and individual harms to action on the economic, commercial and political determinants by investigating and addressing how the gambling industry influences young and vulnerable people into participating in and profiting from their harmful products. Practical next steps include raising community and political awareness about the harms of gambling, demanding an urgent review of the Gaming Act 2006 (Act 721), reducing gambling marketing with a focus on children's exposure and strengthening the commission's purview to oversee gambling operators effectively. There is a finite window of opportunity to slow and reverse gambling harms – that time is now.

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Climate change adaptation must not replicate lockdown scenarios

This paper highlights concerns related to climate change adaptation strategies, including staying indoors and using air conditioning, as these strategies will lead to similar issues as faced with the COVID-19 lockdowns, including social isolation, reduced physical activity and reduced exposure to green space. These are critical concerns in light of climate change.

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There is now an overwhelming body of evidence that climate change is and will continue to adversely affect health, including heatstroke, adverse pregnancy outcomes, worsened kidney function, adverse mental health effects, reduced labour productivity, and threatened livelihoods – and through its environmental impacts, poses a threat 'to our very survival and to that of the ecosystem upon which we depend'.[1] A broad range of responses is urgently required not only to arrest climate change at its source (fossil fuels) but also to minimise the adverse health impacts of an already locked-in climate change momentum.

One such adaptation is improved housing, to insulate us from the effects of increased intensity and duration of heat waves – and the wish to do so has already resulted in a huge increase in the number of houses with insulation, ceiling fans, and air conditioning.[2,3] Air conditioning can be seen as 'a maladaptive response that worsens the energy crisis and further increases urban heat, air pollution, and greenhouse gas emissions',[3] with improved insulation and ceiling fans providing better options for reducing fossil fuel use. While such climate change adaptive measures may reduce our extreme heat exposure, relying on such housing improvements comes with its own health risks – namely being a virtual prisoner in your own home to avoid extreme heat exposure, very much like during the COVID-19 lockdowns.

The COVID-19 experience provided an insight into what our future may look like if we rely upon the protection of our houses as a climate change adaptation strategy. The benefits of physical isolation and quarantine for avoiding infection go without saying, but there are also subtle negative outcomes from staying indoors, related to physical isolation, fewer opportunities for exercise, and isolation from nature.[4]

The COVID-19 experience provided an insight into what our future may look like if we rely upon the protection of our houses as a climate change adaptation strategy

Social isolation is a likely consequence of physical isolation and has been associated with increased all-cause mortality, cardiovascular disease, and poorer mental health.[5] Indeed, Butterworth et al.[6] found that lockdowns to control COVID-19 resulted in poorer mental health. Similarly, staying indoors may reduce opportunities for free and accessible exercise and reduced exposure to green spaces. The negative consequences of reducing exercise are clear, and those who reduced their exercise during the COVID-19 pandemic experienced poorer mental and physical health.[7] These adverse health outcomes may increase if we rely upon staying indoors to avoid heat waves.

Furthermore, we are increasingly understanding the importance of green space exposure in determining mental and physical health, including all-cause mortality.[8] There is a range of elements to green space exposure that may explain these associations. Many of these elements, such as reductions in air, noise and light pollution, as well as reduced heat-island effects,[8] are not dependent on an individual spending time in green spaces, but rather allow public health benefits through the strategic placement of green spaces in

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proximity to residential spaces. However, other elements of green space do require direct access to optimise health benefits therefrom. For example, nature-based virtual reality does not have the same health benefits as actual green space exposure.[9] Similarly, exposure to environmental microbiota may influence the human microbiota and therefore human health,[10,11] and direct exposure to soil and vegetation is likely to have a stronger effect than does aerobiome exposure. Even though the biodiverse aerobiomes from green spaces may influence health outcomes without requiring direct green space contact,[10,11] to benefit people would still need to be in close proximity to a biodiverse green space (within 400 m),[12] and have their windows open – which is unlikely if in an air conditioned home during a heat wave.

If we do not account for the potential adverse health effects of spending more time indoors, we might unwittingly exacerbate the situation with recommendations that do not appropriately balance indoor and outdoor exposures

One could argue that heat waves do not last as long as some COVID-19 lockdowns, however, longer and more frequent heat waves are predicted to affect our health in the future under the majority of climate change scenarios. We highlight the importance of including consideration of the adverse health effects of weather-induced isolation when creating domestic refugia against climate change. If we do not account for the potential adverse health effects of spending more time indoors, we might unwittingly exacerbate the situation with recommendations that do not appropriately balance indoor and outdoor exposures. Retreating indoors may be one weapon in our climate change adaptation armamentarium, but we must not replicate the adverse health effects of lockdowns as revealed by the COVID-19 pandemic.

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In Practice

Creating meaningful knowledge exchange between young people and public health practitioners: what role can researchers play?

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INTRODUCTION

Many leading global health organisations including the World Health Organization (WHO), the United Nations International Children's Emergency Fund (UNICEF), the Wellcome Trust, and the Lancet have called for young people to be included in decisions that affect their health and wellbeing.[1–3] Meaningful engagement with young people is rare. Public consultations are the standard approach used by many statutory bodies to gain insights from the people living in their local communities. The nature of these consultations means that they are often one-off events that do not generate the rapport and trust required to gain meaningful insights. They also do not routinely engage people below the age of 18, partly because of difficulties with securing consent but also because young people have not, until recently, been thought to have views on policy and practice that are worth seeking.[1–3]

If young people's views and contributions are to be sought, effective and engaging methods are needed to involve them in meaningful exchange of views and experience. This article presents what we have learned about this process through conducting a longitudinal qualitative research study with young people during the COVID-19 pandemic. We developed methods to facilitate rapid feedback of findings from our discussions with young people to local government organisations to inform their pandemic response. We present this article to share our experience and reflect on how similar approaches could be incorporated into routine research practice to inform decision-making with a speed that is helpful to policy makers.

TEENS AND COVID-19 (TEC-19)

The Teens and COVID-19 (TeC-19) study followed 80 adolescents (12–19 years) over the first year of the pandemic (March 2020 to March 2021). Participants formed 10 groups, each taking part in up to seven online focus group discussions (FGDs). Participants were asked about their experiences of lockdown, how they spent their time, their concerns, and their views on the local and national government's pandemic response. Bespoke semistructured topic guides were developed for each wave of data collection and covered current events at the time. In some FGDs, we used photos and videos of major events, such as protests, to stimulate discussion about pandemic-related issues. During the study period, our research team regularly met online with local government public health teams to share insights from the FGDs to inform their evolving COVID-19 responses.

REFLECTIONS ON HOW LONGITUDINAL RESEARCH METHODS FACILITATED THE DIALOGUE BETWEEN YOUNG PEOPLE AND POLICY MAKERS DURING THE COVID-19 PANDEMIC

Building trust and rapport

Building strong relationships and rapport with participants is central to qualitative longitudinal research as it helps to develop the trust required for participants to feel comfortable sharing their personal thoughts and feelings.[4] In TeC-19, we allocated each group a specific research team member who facilitated all of their FGDs throughout the project. This enabled the researchers to build relationships with members of the groups, to revisit topics previously discussed in their groups and to reflect with them on changes over time. This rapport-building approach takes time, which may be a luxury that our public policy colleagues do not have in their work with communities. Our participants were paid £20 for each FGD. We believe that compensating the young people for their participation demonstrated respect for their time, their contribution, and their commitment to the research project.

Building strong relationships and rapport with participants is central to qualitative longitudinal research as it helps to develop the trust required for participants to feel comfortable sharing their personal thoughts and feelings

In this study, the research team acted as conduits for the passage of information between young people and policy makers. As we were not part of the process of policy decision-making and had no responsibility for enforcement, young people were willing to openly and honestly discuss their experiences of and views on adhering to government rules and restrictions. As we had regular updates from the policy makers, we were able to involve the young people in deliberative discussions about the impact of the latest changes in policy and how they thought these might affect themselves and other young people. We chose a deliberative approach to our discussions with young people because they have been shown to be more effective in providing opportunities to discuss trade-offs and expectations involved in changes of policy or practice.[5] We, and others, have found this to generate more thoughtful and nuanced consideration of issues and therefore to generate more meaningful engagement with both adults and young people alike.[5]

Collecting high-quality data

TeC-19 was conducted to the rigour and ethical standards expected of academic research. This required careful and consistent documentation of the process of recruitment and data collection as well as keeping a record of pandemic-related events which formed the context for FGDs. The collection and storage of participants' personal data, particularly for those who are underage, requires clear ethics and safeguarding processes to protect participants' anonymity and privacy. One of the benefits that academic researchers bring to involving the public in their research is a governance structure that helps ensure all data are collected and managed ethically and safely. The downside of this is that lengthy processes to secure ethics permissions may delay research, making it difficult to deliver information to policy makers fast enough to be useful in making evidence-based decisions. Our ability to broker useful and timely knowledge exchange between young people and policy makers during the early stages of the pandemic was enhanced by the fact that COVID-related studies were prioritised by ethics panels. Methods to prioritise ethics applications may be something that academic institutions should consider to support urgent local government and other stakeholders' decision-making.

The TeC-19 research team were trained qualitative researchers which enabled them to collect high-quality data. They also had training in asking 'open-discovery' questions,[6] skills in active listening as well as reflecting and summarising participant responses to prompt further in-depth discussion. When collecting feedback from young people about being involved in this research, they told us that these approaches helped them feel their opinions were listened to and valued and that they were making an important contribution to the COVID-19 response.

Data interpretation to provide meaningful insights

The TeC-19 research team also had an understanding of behaviour change theory and adolescent development. This knowledge allowed us to move beyond simply reporting what young people told us and to reflect on the developmental, social and emotional context of their input, allowing us to provide policy makers with a more meaningful and useful interpretation of the data. Examples include our interpretation of the reasons why young people felt the way they did about mask wearing in schools, weekly testing, the Test, Track and Trace app, and further lockdowns.

We used the principles of rapid qualitative analysis to synthesise the data quickly. Rapid qualitative analysis is particularly suited to time-sensitive studies, and allowed our findings to be shared with policymakers at a speed that reflected the urgency to act in response to the challenges of the pandemic.[7] Findings from rapid qualitative analyses have been found to be comparable in rigour and validity to more established, time-intensive qualitative methods.[8] These rapid research methods were frequently applied by researchers during the pandemic when quick decisions had to be made by policy makers on the basis of scant but emerging evidence of the nature of the infection and the likely response of the population.[9,10]

Reflections and considerations for the future

The COVID-19 pandemic was a unique period in time which presented both opportunities and challenges for researchers to engage meaningfully with young people and policy makers. Due to the tight restrictions placed on young people's lives and the uncertainty presented by the pandemic, it is possible that they were more motivated to participate in research than they would have been in normal times. They told us that our research discussions gave them something to look forward to and that they enjoyed participating and being financially rewarded for this. In normal times, there are more competing and attractive pressures on their time and attention. It may also be difficult to achieve the same level of commitment from participants when the issues do not have the same immediate impact on their lives as they did during the pandemic. However, conducting the FGDs online and at times designed to suit them made it easy and convenient to join while also facilitating participation from young people in different locations. Alongside fellow researchers, we learnt the value of online data collection for both research teams and participants.

> **The COVID-19 pandemic was a unique period in time which presented both opportunities and challenges for researchers to engage meaningfully with young people and policy makers**

CONCLUSION

Using longitudinal research techniques and skills in consultations with young people may facilitate their meaningful engagement with, and involvement in, issues that affect their current and future lives. This involves investing time and resources in building rapport and trust, both of which are essential in allowing young people to share their thoughts and opinions freely and honestly. Skills developed through qualitative research also ensure rigorous and valid conclusions are drawn from what young people report. Moving forward, we have learned and wish to share effective ways to meaningfully engage adolescents in decision-making processes. If young people are genuinely to be architects of their own futures, then we need better mechanisms to allow them to take part and be heard in our public policy debates.

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Comment from the Editor

This article highlights how longitudinal qualitative research can be used to develop relationships and rapport with young people and facilitate meaningful conversations to inform policy and practice decision making. It presents the benefits of researchers working alongside practitioners through a thorough process. It also highlights some challenges often faced in engaging young people and through the timescales of the research process and how these were overcome in this study which took place during the COVID-19 pandemic.

In Practice

Enhancing adolescent and youth health through nutrition fluency in Sub-Saharan Africa: ARISE-NUTRINT initiative

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BACKGROUND

Adolescents and young people, aged 10–24, experience critical developmental periods for physical, cognitive, behavioral, and social growth, which influence their lifelong health trajectory.[1] The Sub-Saharan African (SSA) population's one-third comprises people aged 10–24 years, necessitating a public health approach to promote healthy nutrition. Adolescents and youth, who are particularly susceptible to undernutrition and diet-related obesity compared to other age groups, face increased risks for non-communicable diseases (NCDs), a major public health challenge that accounts for 70% of global deaths annually.[2,3] In addition, between 1980 and 2015, the prevalence of overweight/obesity in adolescents increased in SSA, affecting 7.6% of boys and 15.4% of girls.[4] One driver of this increase in obesity is the increase in the consumption of sugar-sweetened beverages (SSBs) – a trend that was most pronounced in countries in SSA.[5]

> **Adolescents and youth, who are particularly susceptible to undernutrition and diet-related obesity compared to other age groups, face increased risks for non-communicable diseases (NCDs), a major public health challenge that accounts for 70% of global deaths annually**

Despite the availability of cost-effective and evidence-based practices to address NCDs in low- and middle-income countries (LMICs),[6] implementing these interventions remains a significant challenge, particularly in promoting healthy behaviors among adolescents and youth.[7] In SSA, limited studies have focused on identifying the barriers and facilitators to implementing interventions and policies that promote healthy behaviors among adolescents and youth.[2,7] Many of these efforts are concentrated on school-going adolescents and exclude those who are not in educational institutions and more vulnerable to unhealthy lifestyles. To be effective, new policies and programs need to consider the diverse profile of adolescents and youth, and involve multifaceted and multilevel efforts across education, health, food, social protection, and digital technology. In addition, various factors affect adolescent and youth diets and nutrition, physical activity, and healthy lifestyle behaviors. However, most intervention studies have focused on micronutrient supplementation. Finally, research is scarce on the long-term costs, effects, and impact of evidence-based interventions in this region.

ARISE-NUTRINT INITIATIVE

To find solutions for these public health challenges, partners from SSA, Europe, and North America have established the multiactor, multidisciplinary, and population-representative ARISE-NUTRINT (The Africa Research, Implementation Science, and Education – Reducing NUTRition-related non-communicable diseases in adolescence and youth: INTerventions and policies to boost nutrition fluency and diet quality in Africa) initiative, which is funded by the European Commission Horizon 2022 and builds on previous successful collaborations of partners.[8–10] The overall goal of ARISE-NUTRINT is to generate high-quality and actionable evidence on

Figure 1

ARISE-NUTRINT consortium includes an experienced group of investigators working in population health and epidemiology, public health and intervention, sustainable nutrition, physical activities, mental health, health management and policy, health economics, mathematical modeling, and health systems from Europe, the US, and SSA. Most investigators have been involved in collaborative projects for many years within an established ARISE Network. The consortium members include partners in Central Europe (Germany, Netherlands), Eastern Europe (Serbia), Southern Europe (Spain), the US, as well as seven countries in SSA (Burkina Faso, Ethiopia, Ghana, Nigeria, South Africa, Tanzania, and Uganda)

the (cost-) effectiveness, impact, and implementation aspects of community-based interventions and policies that promote healthy diets among adolescents in seven SSA countries: Ethiopia, Tanzania, Burkina Faso, Uganda, Nigeria, Ghana, and South Africa (Figure 1).

ARISE-NUTRINT has several sub-aims (Figure 2). First, it aims to identify key nutrition-related health risk factors that contribute to long-term chronic disease burdens affecting adolescents and youth in Western, Eastern, and Southern Africa. For this, we will build a cohort of adolescents (three waves, 2024–2026) and efficiently collect data by piggybacking on endeavors of seven existing Health and Demographic Surveillance Systems (HDSS).[9,10] Furthermore, ARISE-NUTRINT aims to design an effective intervention to enhance nutrition fluency, as well as literacy, practices, and nutritional status. To assure sustainability and appropriateness of the nutrition fluency intervention, which likely will comprise components of digital engagement such as educational videos and SMS/messaging through social media as well as educational material provided through pamphlets, pocket cards, and games will be co-created and piloted with adolescents following a human-centered design approach. This involves various stages, including literature reviews, qualitative investigation, co-creation workshops, drafting paper prototypes, testing the paper prototypes, and refining the prototypes for final implementation. The designed nutrition intervention will be implemented in four countries (Burkina Faso, Tanzania, Ethiopia, and Uganda) and will be evaluated through a randomized controlled trial (RCT) nested within the ARISE-NUTRINT cohort (intervention implementation in cohort wave 2, outcome assessment in wave 3). We will assess performance (processes, mechanisms, barriers, and facilitators), effectiveness, and cost-effectiveness to generate policy-relevant evidence. Finally, ARISE-NUTRINT aims to understand and assess the impact of the taxes imposed on SSBs in South Africa, Ghana, and Nigeria using mixed methods and quasi-experimental designs. Taxation of SSBs is recommended by the World Health Organization (WHO) as the best buy to reduce the consumption of SSBs and the burden of NCDs; however, its impact in SSA countries is unknown.

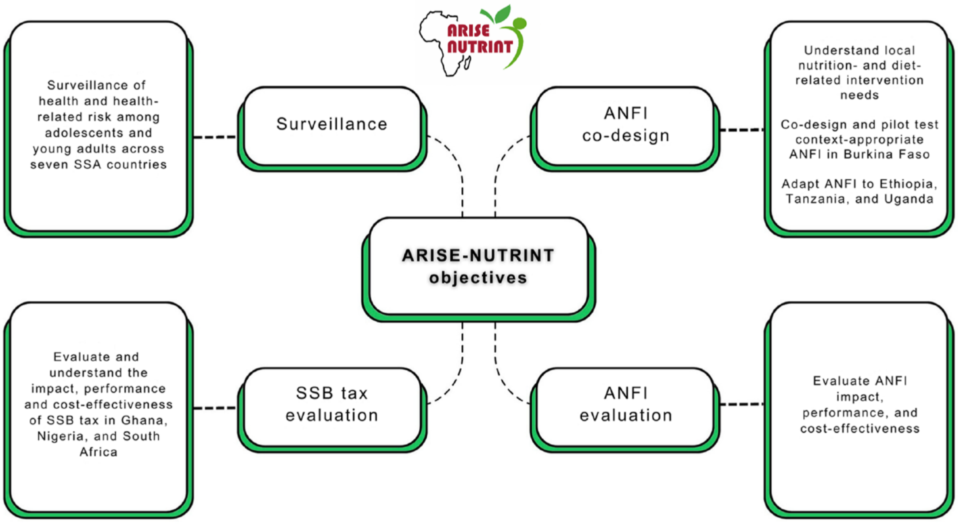
IMPLICATIONS AND IMPACTS

We anticipate several outcomes from ARISE-NUTRINT, including (1) an improved understanding of the risk of NCDs related to diet, nutrition, and

Figure 2

Summary of objectives of ARISE-NUTRINT initiative

ANFI: adolescent nutrition fluency intervention; SSB: sugar-sweetened beverage.



physical activity among key stakeholders; (2) an improved understanding of the long-term costs, effects, and impacts of a co-developed nutrition fluency intervention and a WHO-recommended policy to reduce the NCD burden; and (3) insights into the factors that influence the adoption and sustainability of these evidence-based interventions and policy. A variety of groups are expected to derive benefits from the ARISE-NUTRINT initiative. Policymakers at various levels, from local to global, who aim to reduce the impact of NCDs, can use our results to inform their decision-making, policy adoption, and implementation. Adolescents and youth will benefit from the evidence-based implementation of interventions that aim to increase their nutrition literacy and promote healthier behaviors. Professionals responsible for implementing interventions to combat NCDs, including NCD policy implementers, public health workers, and other stakeholders, can leverage these findings to inform the formation and/or improvement of policy as well as integration strategies for practice. Early career research scientists in SSA and the Organisation for Economic Co-operation and Development (OECD) countries can find these results valuable for their research and career advancement. Finally, the scientific community across various disciplines in the broad field of NCDs can use these findings to further their understanding and research in this domain. ARISE-NUTRINT has the potential to contribute to improving health, economic prospects, and overall wellbeing in the SSA region. ARISE-NUTRINT's findings and insights may also be applicable to other LMICs facing the increasing burden of nutrition-related NCDs among adolescents and youth.

> **ARISE-NUTRINT has the potential to contribute to improving health, economic prospects, and overall wellbeing in the SSA region**

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AUTHOR CONTRIBUTIONS

S.O. conceived the idea. A.L.K., S.O., and S.S. wrote the first draft of the manuscript. A.L.K. edited the manuscript. M.L., C.N., H.B., Y.B., C.H.H., S.L., I.B., D.G., N.B.M., U.P., A.T., and ARISE-NUTRINT collaborators reviewed the manuscript.

CONFLICT OF INTEREST

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Exploring the perceptions and acceptability of an integrated lifestyle database for public health research and service commissioning: a qualitative study

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Keywords

public health stakeholders; lifestyle service commissioning; perceptions; barriers and facilitators; acceptability; integrated database

Abstract

Aim: Public health lifestyle databases at local authority level are currently poorly aligned across the UK. The integration of lifestyle databases at a regional level could provide a rich resource to support research and help inform public health leads and service commissioners in improving service delivery, facilitating decision-making and developing key public health policies. Prior to its implementation, the acceptability of an integrated lifestyle database should be explored. The aim of this study was to consult with public health stakeholders to explore the acceptability of developing and implementing a regional integrated lifestyle database across four key areas of public health: smoking cessation, diet, physical activity and alcohol consumption.

Method: Qualitative interviews were conducted with public health stakeholders recruited from across the East Midlands region of England. All interviews were conducted using video conferencing software and recorded, transcribed, and analysed using the Framework approach. Sixteen public health stakeholders were purposively identified and invited to participate in interviews.

Results: Stakeholders viewed the integrated database as having potential to support research, service development and commissioning decisions. Barriers such as providers' reluctance to reveal their business strategies to rival organisations, cost of setting up and running the proposed database, complex information-sharing and governance were identified.

Conclusion: An integrated lifestyle database has the potential to support research and service commissioning regionally. However, several barriers were identified that must be addressed prior to the development and implementation of an integrated database.

INTRODUCTION

High-risk lifestyle behaviours including, smoking, poor diet, physical inactivity, and excessive alcohol consumption contribute to poor health and are widely acknowledged as prominent risk factors for the development of long-term conditions.[1–6] There is a national drive within the UK towards preventing illness by tackling unhealthy behaviours and promoting health and well-being. The Health and Social Care Act[7] for England outlined specific duties for local government authorities to protect and promote health while reducing health inequalities. Local authorities therefore now provide interventions that reduce risks to health and the impact of disease,[8] in addition to exploring innovative ways of evaluating and improving their services,[9] such as data integration and sharing, and secondary analysis of existing data to identify risk factors and trends in patterns of behaviour.[10,11]

Electronic healthcare records from the UK are accessible to researchers via a number of

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platforms, but they tend to include data from a limited subset of health and care service providers,[11] or from separate geographical areas, unlinked across larger regions. Research in public health is now starting to explore the potential to transition away from siloed data systems to more accessible and integrated data resources.[12,13] Several large integrated health databases, which involve the connection or linkage of multiple databases or datasets, now do exist within the UK, examples of which include the Clinical Practice Research Datalink (CPRD),[14] The Health Improvement Network (THIN)[15] and QResearch.[16] However, many of these contain mostly data from primary care records, with many local authorities in England lacking lifestyle data platforms that cover their whole population.[11] Existing lifestyle-related datasets such as 'fingertips datasets'[17] do collate local authority lifestyle datasets and can be useful in potentially informing service development and commissioning, but these are aggregated at population-level data and may not be suitable for research studies requiring individual-level data analysis across and between local authorities or regions.

While there remains an underwhelming lack of research concerning the development of integrated public health datasets across the UK, Lewer et al.[11] provide an excellent example of the potential usefulness of data integration through the development of the Kent Integrated Database (KID). The KID comprises individual-level linked Electronic Healthcare Records (EHRs) extracted from a wide range of services located across the Kent and Medway region including primary care providers, community health providers, mental health services and services commissioned outside of the National Health Service (NHS) including public health services, adult social care, and palliative care hospices[11]. Although focused primarily on healthcare utilisation, the KID provides data integration across the whole of Kent and Medway, providing a valuable resource for researchers who are investigating a broad range of public health questions while also supporting service commissioning based on patient needs.[11] There is great potential to learn from the KID in exploring how integrated systems can be achieved in different regions and with a focus on individual-level health behaviours.

This study has been designed to examine the potential for a fully integrated public health lifestyle dataset, using the East Midlands region of England as an initial pilot study area. We aim to explore the potential for the development of a model, which incorporates different individual-level lifestyle datasets across different geographical areas or local authorities across the East Midlands region and how lessons learned could be applicable elsewhere. This could help to inform public health policy, service delivery and commissioning decisions. It could also provide a rich data source for more in-depth analysis in future research studies, allowing for greater geographical comparisons of determinants and prevalence of lifestyle behaviours, alongside comparisons between and across lifestyle areas. Furthermore, building an integrated lifestyle database could help to inform regional and national efforts to promote health, support post-COVID recovery and return to business as usual. For example, aligning with the government's recent obesity strategy promoting the nation's health and to protect against COVID-19[18] or the new government white paper on improving healthcare and social care for all,[19] targeting improvements in the delivery of public health and social care interventions to support local systems to deliver high-quality care to their communities. Finally, lessons around data linkage and usage could also be learnt and applied across other local authorities within the UK and beyond.

Prior to development and implementation of such a model, it is important to explore views on the acceptability and potential demand of an integrated lifestyle database. Therefore, the aim of this research was to conduct in-depth qualitative interviews with key public heath stakeholders to explore the acceptability of developing and sharing an integrated lifestyle dataset to support service development, commissioning and research across the East Midlands region.

This study was informed by a feasibility framework,[20] which outlines eight key concepts (acceptability, demand, implementation, practicality, adaptation, integration, expansion, limited-efficacy testing). As the study aimed to explore participant perceptions of a proposed integrated lifestyle database, we focused on the acceptability, demand and practicality elements of this framework, which were adopted to inform the structuring of the topic guide for the consultations. The concepts of acceptability and demand more directly help to explain how practitioners perceived the benefits or usefulness of the proposed integrated database, while practicality helps to explain the potential barriers to the development and implementation of the database.

METHODS

Study design

When conducting a research study, it is important for researchers to reflect on their philosophical perspective and position their research within a paradigm.[21] As the aim of this study was to use in-depth interviews to explore the perspectives of stakeholders and to understand issues around the acceptability of a proposed integrated database, the interpretivist approach was considered appropriate for this research.

The interpretive research paradigm is based on a subjective point of view as it seeks to gather understanding from the perspective of the participant rather than the objective observer (usually associated with the positivist paradigm) of an action.[22] Unlike a positivist approach, as well as understanding participant perspectives, the interpretivist paradigm seeks to establish trustworthiness through dependability, credibility, confirmability and transferability of the research.[23–25] A positivist approach is typically associated with deductive reasoning; however, there are no fixed rules as some qualitative studies may have deductive elements,[26] and individual qualitative researchers may use both deductive and inductive approaches.[27] Therefore, this study adopted an interpretivist position with the flexibility of beginning with a deductive or theory-driven data collection (the topic guide structure and content being informed by a theoretical framework) and coding, and adding new codes inductively.[28,29]

Study participants

A range of public health professionals were purposively recruited from local authorities and local public health organisations from within the East Midlands region of the UK to participate in this study. To identify and recruit from local authorities, a key contact from each of the five County Council areas in the East Midlands region was identified and an invitation via email (with information about the research) was sent to them to facilitate the recruitment of eligible stakeholders to participate in the study. Stakeholders were recruited from within local authorities using the following inclusion criteria: currently engaged as a lifestyle service commissioner, public health consultant, public health manager, intelligence officer, service provider or user in any of the East Midlands local authorities, willing to participate in the study and consent to their data being used for the research. Relevant stakeholders were also identified from regional public health organisations and were invited to take part in this study through an invitational email.

Ten stakeholders from the five County Council responded and agreed to participate in the qualitative interviews. Six stakeholders working for Public Health England (now known as Office for Health Improvement and Disparities) and Population Health Management Implementation in the East Midlands region were also consulted, as they were identified as having the potential to provide relevant or expert information for the study.

Qualitative interviews

Working in collaboration with the National Institute of Health Research (NIHR)–Clinical Research Network (CRN) Public Health Speciality, the East Midlands Directors of Public Health and our Patient and Public Involvement (PPI) group, we conducted qualitative interviews with public health stakeholders across the East Midlands region of England, from September 2020 to February 2021.

Qualitative interviews were conducted using an interview topic guide that was underpinned by the feasibility framework[20] in addition to discussion meetings with the study steering group and PPI. Key questions from the topic guide are outlined in Table 1. Qualitative interviews were conducted using video conferencing software and ranged from 30 to 60 min with an average time of 45 min. Stakeholders were informed that they could withdraw from the study up to the point of data anonymity and integration without having to give reason. Some stakeholders attended the interviews in groups, and there was one group of 2 and another group of 3. Other stakeholders opted to give extensive written feedback to questions on the interview guide, sent in advance, for discussion at the interviews. This written feedback was incorporated into the audio-recorded data for analysis.

In total, 16 stakeholders responded and participated in the qualitative interviews which were arranged by email (including in some cases the provision of additional information and response to questions on the interview guide) and followed up by a virtual meeting via MS TEAMS. See Table 2 for participant details.

Strength, Weaknesses, Opportunities and Threats analysis

A Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis[30] was conducted using the identified qualitative themes to identify the factors that are either supportive or unfavourable to the implementation of an integrated lifestyle database. SWOT analysis is a common tool used in research as part of the strategic planning process and can be used to facilitate a better understanding of a situation and inform decision-making.[30]

Data analysis

Audio data were transcribed verbatim and entered into NVivo 12 qualitative data analysis software system (QRS International Pty Ltd) to organise data and facilitate analysis. The collection of the data and analysis were undertaken until saturation had been reached.[31] In line with the philosophical position outlined above, a Framework analysis of the data[32,33] was conducted, which allowed the researcher to explore deductive (a priori) and inductive (emergent) themes using the following stages: familiarisation, identifying a thematic framework, indexing, charting, mapping and interpretation.[32,33] The feasibility framework concepts of acceptability, demand and practicality guided the deductive coding of the data, while ideas emerging from the data were coded inductively. The perceived benefits of the proposed database expressed by stakeholders were classified in the context of acceptability and demand, while concerns were classified as barriers in the context of practicality to the development and implementation of the database. This approach was deemed systematic and provided a clear audit trail from raw data to final themes, ensuring the trustworthiness of the results.[34,35] In addition, an open, critical and reflexive approach was maintained to ensure a rigorous qualitative data analysis.[36] The Consolidated Criteria for Reporting Qualitative Studies[37] (see Supplemental Table S1) was also followed to add transparency and trustworthiness in reporting the research findings.

RESULTS

The data were organised into two key themes: (1) benefits relating to the acceptability and demand for an integrated lifestyle database and (2) barriers relating to the practicality of constructing and implementing an integrated lifestyle database.

BENEFITS RELATING TO THE ACCEPTABILITY AND DEMAND FOR AN INTEGRATED LIFESTYLE DATABASE

Several subthemes concerning the benefits of the development and implementation of a regional integrated lifestyle database were identified, with evidence suggesting that it may be a useful resource for research development and informing service commissioning through ease of information access.

Table 1.

Key questions from the topic guide relating to feasibility framework concepts of acceptability/demand and practicality.[20]

Background questions	Acceptability related questions	Practicality related questions
1. Your local authority	1. How do you currently use lifestyle intervention datasets?	1. Are you willing to share details of the template (a blank lists of variables) used to collect data across the lifestyle areas so that we can determine whether the variables can be linked to form one database?
2. Your current role	2. How are the datasets used to inform service development?	2. What datasets exist in your area that you are aware of?
3. Area of lifestyle service	3. How can a shared dataset fit into your lifestyle service?	3. Are the datasets in your area separate (for different lifestyles: smoking cessation, alcohol consumption, reduction in physical inactivity and diet/weight management) or integrated?
	4. How can an existing dataset be modified for shared use across East Midlands?	4. What are the barriers to creating an East Midlands wide dataset? What are the disadvantages?
	5. How useful would a shared dataset across the whole East Midlands be? What are the advantages?	5. How cost-effective will a shared dataset across East Midlands be?
	6. What factors will facilitate the implementation of a shared dataset across East Midlands?	6. Where are data shared already and with whom?
	7. Who are the datasets used by?	
	8. How is evidence base used (how can it be used) to steer decision-making in your organisation	

A rich resource for research

Many of the stakeholders expressed the view that an integrated lifestyle dataset would be a potentially rich resource for research:

> *. . . I think it is more of a potential research resource.* (Stakeholder 1)
> *Actually, if you're relating all the provider datasets, that would be a bigger job and it would be potentially more useful for research purposes because it's got those individual level variables.* (Stakeholder 2)

Elaborating further on how an integrated database could support research, stakeholders also suggested that it could be useful for comparing service performance across geographical areas within the region:

> *. . . and looking at makeup of the community or the geographical sort of you know . . . and comparing similar areas to ourselves. And looking at performance in terms of what are they doing, what are they doing differently that we could perhaps adapt and use locally?* (Stakeholder 3)
> *It would give you the opportunity to compare how well things are doing in Lincolnshire compared to say Nottinghamshire because we would have both sets of information, yeah.* (Stakeholder 4)

Ease of information access

Stakeholders expressed the view that a regional integrated dataset may have the potential to make it easier or quicker to access and search for lifestyle service information within a region:

> *. . . you've got five minutes and you want to know about smoking cessation services in Derbyshire. Where would you go to? You've got half an hour to do a bit deeper dive. Where would you go to?* (Stakeholder 8)

Supporting service commissioning

Some stakeholders suggested that they would fully embrace the concept of having an integrated and shared dataset because it would be useful for service commissioning:

> *Having a national collection and reporting process like that of the Department of Health smoking reports would be useful.* (Stakeholder 3)
> *As a service provider we would embrace a shared dataset across the*

Table 2.

Participant roles
Local authority public health stakeholders
1 × Senior representative
1 × Integrated Lifestyle Service Manager
1 × Lifestyle Service Manager
1 × Lifestyle Service User
2 × Consultants in Public Health
1 × Senior Public Health and Commissioning Manager
1 × Health Improvement Principal
1 × Public Health Intelligence and Insight Manager
1 × Data Health Checks and Smoking Cessation Officer
Regional public health organisation stakeholder
1 × Health and Wellbeing Programme Lead
1 × Population Health Analysis and Nutrition, Diet, Obesity and Physical Activity Lead.
1 × Associate Director, Local Knowledge & Intelligence Service
1 x Performance & Intelligence Lead
1 × Lifestyle Service Lead
1 × Health Inequalities/Population Lead

> *East Midlands – there are several considerations; however, I believe it would add value to service delivery and best practice.* (Stakeholder 7)

Modification of existing datasets into an integrated database

Stakeholders supported the construction of a regional integrated dataset and suggested that some datasets already existed in each of the local authority areas across the East Midlands region and within each provider organisation, which could facilitate the data integration process:

> *For the commissioned lifestyle service two data sets exist, one which is used for smoking cessation and another which is used for lifestyle.* (Stakeholder 5)

It was also noted that some standardisation in reporting mechanisms and the variables collected are already in place, particularly for smoking cessation, which could facilitate the dataset integration process:

> *But you know it's quite sort of standardized that people actually think this has got potential.* (Stakeholder 3)

BARRIERS RELATING TO THE PRACTICALITY OF DEVELOPING AND IMPLEMENTING AN INTEGRATED DATABASE

Several subthemes emerged relating to the barriers or concerns of the practicality of developing and implementing an integrated lifestyle database: wide variety of commissioned services and unstandardised collection of variables, unaligned information technology (IT) systems and expense of initial setup, sensitivity of data and the need for service user consent, governance and data access issues, and reluctance of providers to share business strategies with competitors.

Wide variety of commissioned services and unstandardised collection of variables

Although some standardisation in reporting mechanisms and variables collected was already in place, particularly for smoking cessation data, some stakeholders suggested that a wide variety of commissioned services and unstandardised collection of variables existed in other areas:

> *Yeah, . . . it's about the standardising of what people would commission, and another service which may be a private provider. Or it might be an NHS provider. So, provided you've got those two levels of understanding . . .* (Stakeholder 6)

Reluctance of providers to share business strategies with competitors

Lifestyle service providers are often in competition for contracts and may not want to data share because of fear of revealing their service provision strategies to other service providers:

> *The data we collect and the way that we designed the processes are key in securing future business and are therefore not something that we want readily available to competitors in the public domain.* (Stakeholder 7)
> *That makes sense because yeah, I imagine some of them may have objections potentially, if they think they're going to be compared with other areas of the effectiveness of other services.* (Stakeholder 2)

Unaligned IT systems and expense of standardised software

Despite the benefits outlined by stakeholders, currently there are unaligned IT systems and expense of standardised software, in addition to the concerns that it would be costly to migrate from current datasets to a new integrated system and that the cost benefits may not emerge until the dataset is fully established:

> *I think you need to talk to providers . . . and Commissioners directly about it; I think there are insurmountable barriers that cost money.* (Stakeholder 1)
> *Time and capacity to support any implementation as well as any budgetary or procurement processes or other local arrangements.* (Stakeholder 5)

Governance and data access issues

Stakeholders identified several concerns relating to data sharing and governance. Specifically, concerns were raised surrounding the difficulties in fully establishing data sharing agreements across all parties. There also remains unanswered questions about Information Governance and location and security of the dataset:

> *If you're going to make it useful, then you have to have a way for us to access it whilst maintaining data protection and ensuring that we're using it in a way that you agreed with providers that it will be used. Anyway, a whole lot of issues about holding it in data protection.* (Stakeholder 2)
> *. . . and especially with data sharing agreements that would need to be put in place between all the different providers.* (Stakeholder 10)

Furthermore, a concern around the sensitive nature of some of the lifestyle data was expressed, with variation in the extent to which organisations are prepared to fully share their data:

> *Datasets and data collection methods vary greatly between services and there would be significant information governance issues with trying to combine them at a local level, let alone regional.* (Stakeholder 11)
> *Well, I would be a bit concerned because I know that all the names and addresses are attached to that information.* (Stakeholder 4)

Need for user involvement and consent

In planning for the construction and implementation of a regional integrated database, some stakeholders believed that there was a need for service users to fully understand, be involved in and consent to the use of their personal (albeit anonymised) data for research or commissioning purposes:

> *. . . and you to have, I guess consent from the service users as well, it's going to be shared in a different way. You know, it depends on how the providers want it shared, because many of them will likely have some agreement already.* (Stakeholder 10)
> *Data sharing would have to be done with client consent and how reasonable is it to ask clients to agree to their data being shared with numerous other stakeholders with no direct involvement in whatever intervention they're receiving.* (Stakeholder 11)

SWOT ANALYSIS

A SWOT Analysis[30] was completed using the qualitative data to organise the identified themes to outline the strength, weakness, opportunities and threats for the potential implementation of an integrated lifestyle database (see Table 3).

DISCUSSION

The aim of this study was to explore the views of public health stakeholders regarding the acceptability of developing and implementing an integrated lifestyle dataset to support services across the East Midlands region of England. There were clear benefits identified by stakeholders, including its potential for easing information access, supporting service commissioning and its potential as a rich resource for supporting research. Several barriers were identified, including reluctance to reveal business strategies to rival organisations, cost of setting up and running the proposed database, complex information-sharing and governance, which would need addressing prior to the development and implementation of a formal integrated database. The present study provides important insight into some of the perceived facilitators and barriers that could be used to guide and inform future researchers when considering the development and implementation of an integrated public health database.

Improved access to large-scale, multimodal data has previously been viewed as essential to creating an environment where research, healthcare delivery and population health are underpinned by data-driven approaches.[38] Previous evidence has shown that improving access to data can largely increase the quantity, quality and diversity of scientific research,[39] and the facilitation of a more efficient secondary use of data.[40,41] Furthermore, the development of a regional integrated database has the potential to draw data from a wide range of providers and services allowing for a system-level insight into patient journeys and care utilisation while providing a unique epidemiological insight into key health determinants.[11] In addition to easing information access and its use as a rich resource for research, an integrated public health dataset was also viewed as useful in supporting and informing service commissioning. Evidence has previously highlighted the usefulness of

Table 3.

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of data from the consultation exercise with public health professionals

Strengths	**Weaknesses**
• Datasets already exist in each of the local authority areas across the East Midlands region and within each provider organisation • Data are already routinely collected. • Some alignment with information technology (IT) systems already in place • Some standardisation in reporting mechanisms and variables collected already in place (particularly in relation to smoking cessation) • Evidence that some stakeholders would fully embrace the concept of having an integrated and shared dataset	• Collection of variables not completely standardised across the region • IT systems and processes not fully aligned across the region • Wide variety of currently commissioned providers of public health services currently in place • Areas vary in the profile of service provision: some offer fully integrated services encompassing all four key lifestyle areas, whereas others have separately delivered services • There is an initial need to map out provision across the region • Evidence to suggest that some stakeholders are sceptical about the practicalities and utility of having an integrated and shared dataset • Expensive to standardise software and approaches • Reluctance of companies to share their private commercial products • Commissioner expectations and demands vary wildly across Localities
Opportunities	**Threats**
• Great potential for a rich and well-powered resource for research and commissioning decisions • Potential for geographical comparisons in both Key Performance Indicators (KPIs) (from commissioner-level dataset) and individual-level lifestyle/sociodemographic data (provider-level dataset). • Potential for comparison across and between the four key public health lifestyle areas (would allow for comparison between individually commissioned and integrated lifestyle services)	• Data are sensitive and there is variation in the extent to which organisations are prepared to fully share their data • Difficulties in fully establishing data sharing agreements across all parties. Unanswered questions about Information Governance and location/security of dataset. Mechanisms for data access and permissions might be difficult to establish • Need to fully understand user involvement and consent to use personal (albeit anonymised) data for research/commissioning purposes • May be costly initially (to migrate from current dataset to a new integrated dataset) with cost benefits not emerging until dataset is fully established (high risk as difficult to accurately project/model) • Lifestyle service providers seem to be in competition for contracts and may not want to data share because of fear of revealing their service provision strategy

integrated datasets in better assessing the magnitude of health problems, including identifying vulnerable populations, developing policy and evaluating interventions and initiatives.[42] A poignant example involves the recent COVID-19 pandemic where the development and maintenance of many integrated public health databases have been integral in informing rapid decision-making at a local, regional, national and international level.[38,43]

The potential benefit of easing information access is supported by evidence that combining data can enhance access to information at minimal cost.[13] The ease in accessing information can enhance other potential benefits of service commissioning and research. As a rich resource for research, the proposed integrated database could contain individual-level variables for more detailed and stratified data analysis, as previous integrated database-related studies found a research-related benefit of increased power for secondary data statistical analysis.[10,11] Overall, these findings around benefits align with the views of experts and policymakers from a previous study, suggesting that Electronic Health Records offer significant benefits when they are used appropriately.[44] Hence, the proposed integrated lifestyle database could be useful not only within the East Midlands region but also in other regions of UK, and further afield, as it could be used to provide a snapshot of current situations and continually maintained to provide an ongoing source of data for researchers and local authorities. Specifically, like the Kent Integrated Database,[11] the proposed integrated database could be developed by linking individual-level lifestyle service data and updated regularly (e.g. monthly) for data to be available for research within a few months, easing access to information and allowing for rapid evaluation of service changes.[11]

Despite the potential benefits surrounding the development of an integrated database, there are still important barriers to consider when integrating public health data, which need to be addressed and fully understood. In line with the views of public health stakeholders in the current study, both economic and technical barriers are widely considered major obstacles to data integration.[45,46] The cost of both human and technical resources to prepare data, and annotate and communicate with recipients in addition to technical solutions to collect, integrate and share complex, heterogeneous data is often problematic within the public health sector.[45,46] This is supported by previous evidence that show high acquisition and maintenance costs when implementing new electronic systems[44] in addition to restrictions of data harmonisation due the heterogeneity across outcomes.[10]

An important concern is around the wide variety of commissioned services and unstandardised collection of variables, data collection methods and incompatible IT systems, which could make data linkage very challenging. Concerns around the initial cost of aligning IT systems and setting up standardised software have been expressed in this study and supported by evidence from a previous study concerning drawbacks associated with Electronic Health Records including high acquisition and maintenance costs.[44] Similar concerns were found in another previous study relating to variations in service commissioning and collection of variables alongside the need for a more standardised approach to data collection to maximise the potential for data integration.[10] While these concerns are important, it has been argued that the ultimate benefits of a fully integrated and functioning database could outweigh the initial cost of IT systems and standardised software.[44] Governance and data access concerns have also been expressed in the current study in terms of how best the proposed database can be housed and maintained. These findings support previous evidence on practical issues around how and where integrated data should be stored, controlled and accessed.[13] Data sharing could help to harmonise organisations,[47] but when sensitive information is involved, many lifestyle service providers within organisations like local authorities would be reluctant to share their data governed by privacy conditions.[48] As expressed by stakeholders in the current study, the concern here is about how service user privacy will be guaranteed. A related barrier is the need for service user involvement and consent, as service providers and users may refuse to share their data, as they may be worried about sharing business strategies with competitors and the risk of giving away person-identifying information. A reluctance to share data could slow research efforts to help reduce illness and prolong life, and taxpayers who contribute to research could be denied the benefits of such research efforts.[13] However, concerns around data sharing could be resolved if lifestyle service providers and users are reassured of protective measures such as anonymising the information collected into the integrated database. Drawing from the Kent Integrated Database,[11] this could be done by incorporating a unique reference number across all datasets, allowing individual lifestyle service users to be tracked across local authorities, leading to high-quality linkage with low risk of identifying personal and sensitive data of service providers and users.[11]

The findings in the current study closely align with the feasibility framework concepts (Table 1). The benefits to the proposed integrated database found in this study, including ease of information access and potential to support research and lifestyle service commissioning, are aligned with the concepts of acceptability and demand[20] for the development and implementation of the proposed integrated database in the East Midlands region of England and lessons learned potentially applicable to other regions. On the other hand, barriers identified relate to the concept of practicality[20] which could oppose the development and implementation of the integrated database. However, evidence suggests that such barriers or local factors should be taken into consideration when planning the construction and implementation of an integrated database.[10,11] Hence, one strength of this study is the identification of local factors, which are benefits and barriers, directly from stakeholders across the East Midlands region, which could be important for informing the development and implementation of the proposed integrated database. In addition, this study has provided relevant information from stakeholders that could contribute to the development and implementation of an individual-level integrated database, which currently does not exist particularly in the study region.

Limitations

An observed limitation of this study was that several stakeholders were willing, but unable to participate in the qualitative interviews due to the ongoing COVID-19 pandemic or workload. Public health consultants, practitioners, IT personnel, service providers and users who missed the qualitative interviews could have offered greater insight if they had participated. Furthermore, while this study may be used to inform the development of data integration across other regions of the UK, it is important to acknowledge that the views in the present study were specifically from stakeholders in the East Midlands region.

Implications for practice and further research

The barriers and benefits need to be addressed in planning for the construction and implementation of an integrated database. Further in-depth interviews with more stakeholders, particularly service users and providers, IT personnel, governance and data protection experts, is recommended to explore how barriers to the database construction and implementation can be overcome. Future research should seek to: examine under what conditions people would be willing to work collaboratively with a shared dataset across the East Midlands region; examine any potential benefits and barriers to data access or collation and sharing; and produce a toolkit, outlining the key factors to be considered (and how these could be addressed) in the construction of a regional integrated lifestyle database.

CONCLUSION

Based on findings from conducting qualitative interviews with public health stakeholders, an integrated lifestyle dataset has the potential to inform public health policy and practice in the East Midlands region of England and other local authorities across the UK in their approach to lifestyle data integration and usage at local authority level. It also has the potential to support in-depth statistical analysis, informing public health lifestyle interventions leading to prevention or reduction in long-term conditions and improvement in health outcomes. However, local factors such as the barriers and benefits identified should be considered.

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CONFLICT OF INTEREST

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ETHICAL APPROVAL

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AVAILABILITY OF DATA AND MATERIALS

The data used to support the findings of this study are available from the corresponding author upon request.

SUPPLEMENTAL MATERIAL

Supplemental material for this article is available online.

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The Middle-Out Perspective: an approach to formalise ‘normal practice’ in public health advocacy

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Keywords

advocacy; health improvement; middle-out perspective; public health; middle actors

Abstract

Aims: The middle-out perspective (MOP) provides a lens to examine how actors positioned between government (top) and individuals (bottom) act to promote broader societal changes from the middle-out (rather than the top-down or bottom-up). The MOP has been used in recent years in the fields of energy, climate change, and development studies. We argue that public health practitioners involved with advocacy activities and creating alliances to amplify health promotion actions will be familiar with the general MOP concept if not the formal name. The article aims to demonstrate this argument.

Methods: This article introduces the MOP conceptual framework and customises it for a public health audience by positioning it among existing concepts and theories for actions within public health. Using two UK case studies (increasing signalised crossing times for pedestrians and the campaign for smoke-free legislation), we illustrate who middle actors are and what they can do to result in better public health outcomes.

Results: These case studies show that involving a wider range of middle actors, including those not traditionally involved in improving the public’s health, can broaden the range and reach of organisations and individuals involving in advocating for public health measures. They also demonstrate that middle actors are not neutral. They can be recruited to improve public health outcomes, but they may also be exploited by commercial interests to block healthy policies or even promote a health-diminishing agenda.

Conclusion: Using the MOP as a formal approach can help public health organisations and practitioners consider potential ‘allies’ from outside traditional health-related bodies or professions. Formal mapping can expand the range of who are considered potential middle actors for a particular public health issue. By applying the MOP, public health organisations and staff can enlist the additional leverage that is brought to bear by involving additional middle actors in improving the public’s health.

INTRODUCTION

Both the general public and professionals in a wide range of disciplines are familiar with ‘top-down’ and ‘bottom-up’ approaches for mobilising change. Top-down actions use governments’ regulatory powers and fiscal influences to introduce or impose policy measures, such as controlling the COVID-19 pandemic. Bottom-up activities involve grassroots and individual actions (including purchasing power) to change groups’ or institutions’ behaviours at a local, regional or national level; the #MeToo and the Black Lives Matter movements are recent international examples.

Public health practitioners and organisations are generally positioned between national government and the general public. They work by assembling, reviewing and disseminating evidence and trying to influence upwards to government and downwards to local communities and individuals. However, this model underplays an essential component of effective public health working: liaising with, influencing or supporting others who are also in ‘the middle’.

The ‘Middle-Out Perspective’ (MOP) is a socio-technical framework first described by Janda and Parag[1] in 2013. They showed how various groups of actors positioned between actors at the top

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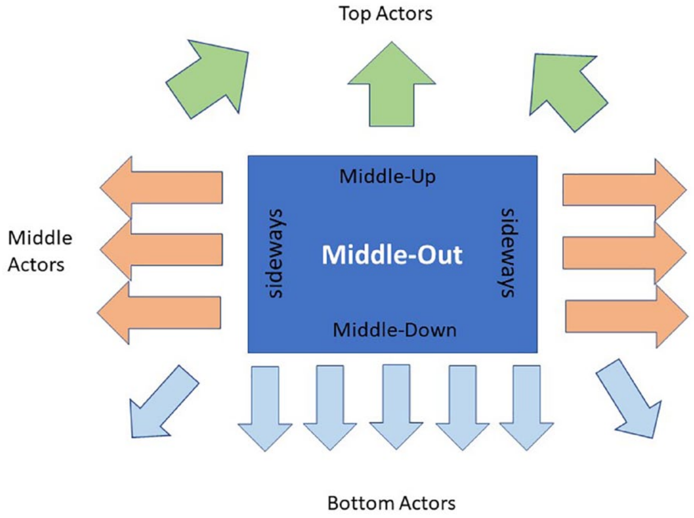
Figure 1.

The middle-out perspective.



and the bottom, that is, middle actors such as public health practitioners and other organisations working to improve the public’s health, exert their influence in three directions: middle-up, middle-down and sideways (Figure 1). They also examined the modes by which influence was exerted: ‘enabling’, ‘mediating’ and ‘aggregating’.[1] This approach was described initially in the field of energy and the transition to low carbon systems.[2–4] Kranzler *et al.*[5] applied the MOP in the field of public health to identify and focus attention on stakeholders positioned between the policymakers generally associated with ‘top-down’ approaches and those involved with ‘bottom-up’ actions, calling for MOP to be incorporated into the public health skill set.

Existing concepts and theories for public health actions

Public health has a tradition of integrative leadership and advocacy, including coordination of individuals, organisations and communities with diverse perspectives to bring about concerted actions for equitable population health benefit.[6] At the core of public health practice is addressing the ‘wider determinants’ of health, a diverse range of social, environmental and economic conditions and commercial influences,[7–10] which impact upon physical and mental health and contribute to health inequity.[11] The mechanisms by which such factors influence health are dynamic and inter-related, involving a diverse array of multisectoral stakeholders operating within a broad, complex system, which the public health community must effectively navigate and ultimately influence to achieve desired outcomes. Therefore, public health professionals are well accustomed to operating beyond organisational ‘silos’. Yet the role of critical actors who are in the ‘middle’ of the system is often neglected in traditional public health practice.[12] Existing conceptual models include characterisation of preventive public health action reflecting targeted interventions for ‘upstream’ health determinants (structural, affecting the population) and ‘downstream’ (individual) minimisation of harmful consequences,[13] and application of systematic methodological frameworks, for example, Health Impact Assessment processes.[14]

Nearly all health promotion programmes and public health policy initiatives involve changes in people’s behaviour and practices and the introduction of new norms and procedures. Their success depends on multi-faceted efforts, requiring collective action to tackle and overcome different societal, technological and economic challenges. Thus, actors such as government and regulators collaborate with public, third-sector, and sometimes private organisations, and the public to achieve goals. In other words, actors positioned at the top, bottom and middle change the way public health programmes are developed, implemented and regulated.[5]

Although public health research and evaluation have traditionally adopted linear cause and effect models, the complexity of public health systems[15] and interventions[16] are increasingly recognised.

Health in all policies (HiAP) is an established conceptual public health approach, which seeks synergies in cross-sector actions to improve population health and equity.[17] An HiAP approach inherently encompasses a broad spectrum of activities, from single collaborations with individual policymakers to ongoing multi-agency collaborative processes, with diverse stakeholders, including those who do not consider themselves as operating within the public health sphere.[11] Such advocacy comprises three pillars: information, strategy and action,[18] requiring multiple participant roles and levels of engagement and involvement across the information, strategy and action domains. While recognising public health professionals’ direct advocacy role, this framework does not explicitly recognise the key role of additional relevant actors, both individual and organisational, and the influence of potential ‘middle actors’ including those not traditionally considered public health actors, for example, builders.[3] Similarly, existing research on public health advocacy has a narrow focus, typically considering health message articulation and communication within the professional or practitioner community.[7,19,20]

The MOP conceptual framework focuses on middle actors and examines how they can promote (or diminish) action by enhancing top, bottom and other middle actors’ interest in action and ability to act. In the public health field, middle actors include a wide variety of organisations that can contribute substantially to making a case for a new or amended policy or its successful implementation, to improve health and reduce inequalities. They include local government (policymakers and practitioners); higher education institutions; third sector organisations; community, interest, or industry groups; private businesses; religious organisations; and professional associations. We propose the MOP to address the existing over-simplification of ‘top-down’ and ‘bottom-up’ approaches by providing a lens through which to view public health advocacy work and identify other actors and activities that can be recruited to progress a public health agenda. Such processes thereby acknowledge the contribution of middle-sector actors beyond the core professional public health community. In this article, we describe the MOP and analyse two case studies through the MOP lens.

Box 1.

Attributes of middle actors

- Institutions that are visible, separate and specified, e.g. through:
    - Organisational structures
    - Membership
    - Procedures or rules, whether official or not
- Have access to:
    - Unique resources, for example
        - Funding
        - Equipment
    - Other resources, for example
        - Expertise
        - Experience
- Have a distinct authority and legitimacy:
    - Professional, legal and rational
    - Spiritual and ethical
    - Traditional and charismatic
- Have pre-existing formal and/or informal channels of communication with:
    - Their own members
    - Other middle actors
    - Top actors (e.g., decision-makers, policymakers)
    - Bottom actors (e.g., individuals and citizens)

Expanded and adapted from Janda and Parag[1,4]

METHODS

Theoretical basis of the MOP

Middle actors

Janda and Parag[1,4] identified specific attributes necessary to be considered as middle actors (Box 1). Kranzler *et al.*[5] described the domain of middle actors as *‘elusive administrative spaces’* within which they *‘shape policies, steer funding and facilitate continuity’*. Through these domains and activities, middle actors can exert their influence, upwards to policy makers, downwards to the public, and sideways on other middle actors in the policy arena.

Middle actors can be the immediate target that public health is aiming to influence because of their potential to be powerful allies or communication channels for knowledge exchange and suggested actions. They may be entities that affect the public’s health, without being recognised as public health organisations, such as companies providing public transport information.

How middle actors influence others

Tackling complex public health challenges requires the adoption of complex and multi-disciplinary interventions that take account of contexts, actors and environments. In such a turbulent and ‘messy’ arena, middle actors are important. How do middle actors contribute to long-lasting and sustainable programmes and policies? The main mechanisms identified by Janda and Parag[1,4] are *mediating, aggregating* and *enabling*, although these sometimes overlap.

Middle actors act as *mediators* between the various actors in the field, often functioning as an effective communication channel, and as translators of needs and limitations. They *aggregate* various resources, for example, knowledge and funding, to make them more robust and visible to the other actors in the field. They use their own unique resources and legitimacy to *enable* action by removing or overcoming different types of contextual, technical, normative barriers and obstacles.[1] These modes of action occur both within public health[5] and elsewhere.[2]

Mediating is particularly suited to public health practitioners’ strengths in using language appropriate for different audiences and, where necessary, ‘interpreting’ between different professional or disciplinary groups, policymakers, and the public, including giving a voice to those frequently under-represented in research and policy debates.[19] Health practitioners are positioned well to *aggregate* fragmented evidence and local knowledge into a comprehensive, robust and trustworthy reflection of the field. The aggregation makes scattered phenomena visible to other actors in the field. They can also aggregate relatively small budgets from different sources into a more meaningful amount, supporting more substantial action. Their unique resources that other actors lack, including moral, professional and ethical legitimacies and access to tacit and local knowledge, help them overcome barriers for change and *enable* (or delay or block) action.

Case studies

We selected two case studies in which non-governmental and public health organisations (some traditionally involved in health promotion and some not) have worked collaboratively to achieve national policy changes.

Case study 1. Smoke-free legislation: Successive governments in England have had a long-standing commitment to voluntary agreements with industry for tobacco control[21] and other public health areas. The legislation

Figure 2.

Types of signalised pedestrian crossings in the United Kingdom: (a) pelican crossing (fixed timings), (b) countdown crossing (fixed timings), and (c) PUFFIN crossing (camera-controlled).

banned smoking in indoor public places, including workplaces, places of entertainment, shops, transport, etc., and reinforced existing local initiatives on public transport, for example.

Case study 2. Signalised pedestrian crossings: Pelican signalised pedestrian crossings (Figure 2(a)) have two pedestrian phases. The ‘invitation to cross’ (the ‘green person’ showing), lasts 6–10 s in the United Kingdom, dependent on road width. This is followed by the ‘clearance time’ (a flashing green icon or nothing visible to pedestrians), so those who are already crossing the road can reach the other side before the road traffic resumes. The clearance time duration assumes a walking speed of ⩾1.2 m/s (4.3 km/h, 2.7 mph) in the United Kingdom; the limited time available deters mobility, rather than causing injuries.

The clearance time duration assumed an average walking speed for the general public but did not take account of slower walking speeds for the elderly. Due to pressure initiated by a non-governmental organisation (NGO), the signal crossing time was changed.

For each case study, we analysed who the actors were and how the actions taken by the key actors were used, applying the MOP framework described above.

RESULTS

Case study 1: smoke-free legislation in England

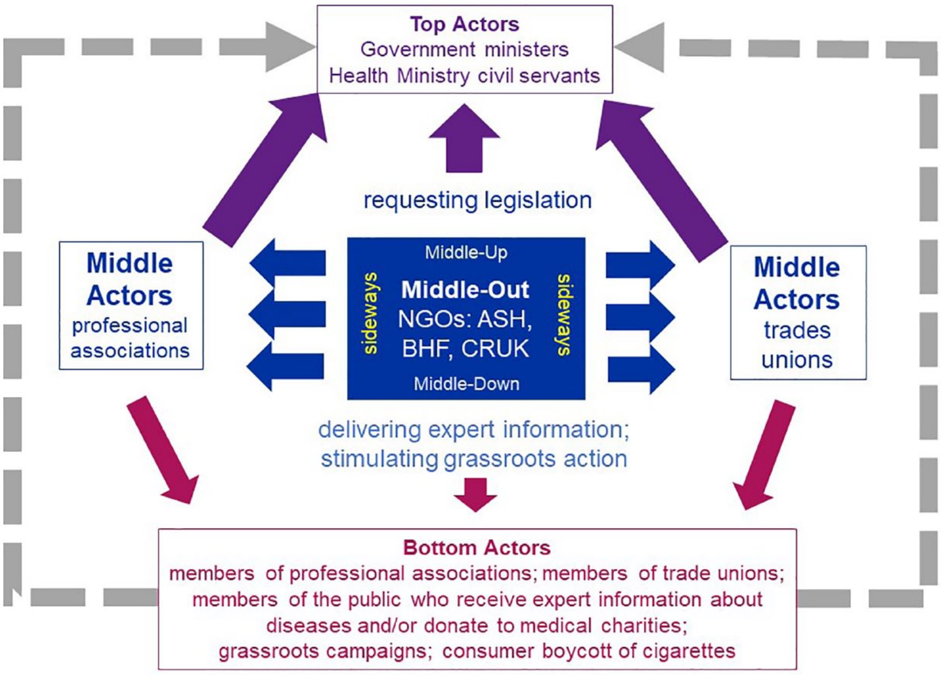
An account of the advocacy work by a consortium of NGOs and practitioners’ organisations that led to the national government in England passing smoke-free legislation in 2006, implemented in 2007, has been published elsewhere.[22] The top, middle and bottom actors are shown in Figure 3. Bottom actors were very wide-ranging in their backgrounds, knowledge of the issue and concerns. The tobacco industry also used a middle-out approach, working through front organisations and hospitality trade associations, encouraging them to recruit their own bottom actors to lobby government to oppose smoke-free legislation (see below).

The process was led by the NGO Action on Smoking and Health (ASH, www.ash.org.uk). The initial action was to build a coalition to advocate for smoke-free legislation to protect children and non-smokers from secondhand smoke. ASH was closely familiar with the action and interests of many other middle actors, and with decision-makers’ attitudes and pressure put on top actors preventing them from adopting new actions on smoking. ASH understood that while many small organisations advocate action against smoking, they can be invisible to decision-makers and their voice is not heeded. *Aggregating* these voices in a coalition made them more visible and their demand more influential. ASH’s professional expertise and reputation made them a trustworthy actor and granted them a professional legitimacy in the tobacco policy domain. The middle actors’ coalition’s activities are summarised in Table 1.

However, the tobacco industry is also a powerful middle actor active in the smoking policy arena, driven by a strong economic incentive not to limit smoking. The tobacco industry used the hospitality industry as their own middle actors, working sideways to encourage

Figure 3.

The middle-out perspective used in advocating for smoke-free legislation.



vociferous opposition to the proposed legislation by clubs, restaurants, and bars, for example, in the media and middle-up to lobby politicians against the proposal. Nevertheless, when Liverpool and London proposed passing local smoke-free legislation, when national legislation was not forthcoming, this cleverly separated the interests of the hospitality industry and the tobacco industry: the hospitality trade viewed national legislation as preferable to local laws and the ‘uneven playing field’ that would result.

ASH had only around five to seven members of staff during this period but enabled a multiplicative effect for the volume of advocacy, successfully scaling up its reach and effectiveness. For example, over 50% of the public were aware of the existence of ASH, and 92% of stakeholders rated ASH’s campaigning and policy work as excellent or good.[23]

Case study 2: increasing signalised crossing times for pedestrians in the United Kingdom

Using nationally representative Health Survey for England data, Asher *et al.*[24] demonstrated that 76% of men and 85% of women aged 65+ who could walk 8 m unaided walked slower than the 1.2 m/s threshold speed. Mean walking speed was 0.9 m/s for men and 0.8 m/s for women. On publication, there was massive traditional and social media coverage (https://academic.oup.com/ageing/article/41/5/573/47590#405680, https://oxfordjournals.altmetric.com/details/791287), noticed by non-governmental (civil society) organisations (NGOs) and community groups.

Stimulated by this media coverage, Living Streets, an NGO that promotes walking and campaigns for better conditions for pedestrians launched *‘3 Seconds More’* in November 2013 (https://www.livingstreets.org.uk/policy-and-resources/our-policy/crossings). This campaign aimed to increase the time available to cross an average road by reducing the assumed walking speed to 0.8 m/s. Opposition came from motorists’ organisations and traditional transport planning approaches that prioritise motor vehicles, valuing car occupants’ time more than other road users’.

Middle-out activities

As the signalised crossings’ timings are mandated by national government, top actors were the Secretary of State (Minister) for Transport and the Minister for Roads, plus senior civil servants in the Department (Ministry) for Transport (DfT). They were the only actors with sufficient power to enable change.

The bottom actors in this arena were members of the public (particularly the elderly and those concerned for people with mobility impairments), local community groups, and individual practitioners who were members of professional organisations.

Middle actors were organisations interested in population health, transport, ageing, and/or inequalities, including local government and other practitioners’ professional associations; NGOs; and the media. One of the paper’s authors (J.M.) worked with Living Streets to include a broader set of middle actors, including the Transport and Health Study Group (an association of practitioners, policymakers and researchers interested in implementing evidence-based policies to improve health and reduce inequalities

Table 1.

Smoke-free legislation in England.

Direction of activity	**Enabling**[a]	**Mediating**[a]	**Aggregating**[a]
Middle-down	*Using professional legitimacy to build support*: Using ASH’s reputation for impartial evidence to educate the public via the media.	*Communication with the public* to increase interest and motivation: Middle actors generated grassroots support, framing the issue around improving the public’s health, reducing disease and protecting employees from occupational exposure to a lethal substance. *Translating between professional and public languages*: ASH filled the role of mediators between the scientific knowledge and evidence on the relations between smoking and health, publishing reports to maintain interest and expand knowledge. Middle actors built up public knowledge of the risks of SHS support by tailoring their messages to their members’ particular focus.	*Development of public knowledge of the risks of secondhand smoke and public support*, to improve its interest to engage in the debate by communicating with the public via the media and with members/supporters *Formalisation of a grassroots initiative*: Middle actors encouraged their supporters to write to their MPs to garner political support and demonstrate to national government that there was widespread public support.
Middle-up	*Building relationships*: ASH and other middle actors developed relationships with key individuals advising government *Lobbying*: Middle actors lobbied government directly; and wrote to MPs and Peers. *Influencing the drafting of legislation*: Legislation proposed by ASH and its coalition of middle actors was supported in a report by the cross-party House of Commons Health Select Committee. Many of the experts who gave evidence to the Select Committee were themselves middle actors.	*Translating between professional and sectoral languages*: ASH filled the role of mediators between the scientific knowledge and evidence on the relations between smoking and health. They proposed an evidence-based agenda as an alternative to the one proposed by the tobacco industry *Building political pressure*: Middle actors were able to demonstrate to national government that there was widespread public support. Core middle actors responded immediately with a letter published in a leading national newspaper, signed by senior figures from FPH, CIEH, the national public health association, and others, decrying the Secretary of State [Minister] for Health’s comments that poor women needed to smoke.	*Aggregating the evidence from the field* to present top actors with a comprehensive and more complete view of the issue: Middle actors aggregated the evidence, which supported their position.
Sideways	*Identifying legal/financial levers*: Middle actors worked with employers, employees, and lawyers to raise the threat of legal action by employees. *Identifying new policy levers*: Middle actors used the threat of local legislation in Liverpool and London to divide the hospitality trade from the tobacco industry.	*Building and maintaining coalitions with allies*: ASH’s initial sideways work was with an existing core group of middle actor organisations. *Expanding the coalition*: Middle actors worked within their own localities to generate political support within local government authorities, which then became additional middle actors. ASH and CIEH recruited local authorities. Fifty stated they were interested in becoming smoke-free; some went further. *Translating between professional and sectoral languages*: ASH filled the role of mediator between the scientific knowledge and evidence on the relations between smoking and health.	*Aggregating the evidence*: Middle actors used evidence to support their position with other hospitality trade middle actors. ASH supported the London Health Commission’s consultation ‘The Big Smoke Debate’, aiding publicity and encouraging grassroots and middle actors to respond. Six other regions followed suit, broadening the extent of local dissemination of the evidence.

[a] Enabling: enabling action by using own resources and legitimacy to overcome barriers; Mediating: providing a communications channel; Aggregating: providing resources, for example, knowledge and funding.

ASH: Action on Smoking and Health; CIEH: Chartered Institute for Environmental Health; FPH: UK Faculty of Public Health of the Royal Colleges of Physicians.

Table 2.

Increasing signalised crossing times for pedestrians in the UK.

Direction of action	**Enabling**[a]	**Mediating**[a]	**Aggregating**[a]
Middle-Down	*Providing information*: Living Streets enhanced their supporters' capacity to act and engage by providing encouragement and guidance on how to raise this with their MP or DfT.	*Communication with the public*: Living Streets maintained communication with the public (via their own supporters). Other middle actors (professional associations, NGOs) also communicated with the public directly, using the media, or via their members/supporters.	*Formalisation of a grassroots initiative*: Living Streets contacted their supporters, who already had high motivation to engage with this issue but increased that by encouraging them to lobby the DfT directly or via their own MP.
Middle-Up	*Influencing the drafting of legislation*: As a result of their campaigning, based on the Asher *et al.*[24] paper and the TRL report they commissioned, Living Streets staff were asked to review a chapter of DfT's updated *Traffic Signs Manual.*	*Translating between professional and sectoral languages*: Middle actors presented evidence (e.g. Asher *et al.*, 2012, the TRL review) that fed in to the draft NICE *Guidance on Physical Activity and the Built Environment*, responded to drafts, and lobbied the DfT and the relevant Ministers directly. *Awareness-raising*: Middle actors used national media intensively to keep the issue live on decision-makers' agenda, e.g. publicising research by Living Streets of examples of individuals' difficulties in crossing the roads due to disabilities or poor crossing design (e.g. https://www.pressreader.com/uk/daily-mail/20170822/281676845029906)	*Aggregating the evidence*: Living Streets commissioned TRL to review the evidence on crossing times and older people's walking speed, which confirmed Asher and colleagues' findings.
Sideways	*Providing information*: Living Streets brought the issue to other middle actors' attention and provided the evidence underpinning the problem for a substantial proportion of the population in trying to cross roads safely.	*Building and maintaining coalitions with allies*: Living Streets involved the media and the other middle actors with good mediation capabilities, increasing their interest to participate by bringing the issue to their attention and providing the evidence underpinning the problem.	*Scaling up*: Living Streets invited other middle actors to encourage their members to join the advocacy efforts.

[a]Enabling: enabling action by using own resources and legitimacy to overcome barriers; Mediating: providing a communications channel; Aggregating: providing resources, for example, knowledge, funding.
MP: Member of Parliament; DfT: Department for Transport; NICE: National Institute for Health and Care Excellence.

associated with transport) and the UK Faculty of Public Health (the professional association for public health specialists).

Living Streets' actions are summarised in Table 2, classified by the type and direction of action. More than 10,000 people wrote to their MP to support the campaign, asking the MPs to lobby the Secretary of State to give pedestrians 3 more seconds at signalised pedestrian crossings. The aggregation of actors' voices and mediation between the levels increased the visibility of the crossing times issue, raised decision-makers' awareness, and put it on their agenda.

One grassroots response to the media coverage was to create, perform and upload online a YouTube video *'Hey Mr Boris'* by a campaigning choir of older people in a deprived area of London (https://www.youtube.com/watch?v=IpwboQxVJtg).

Outcomes

The *middle-up* impact was evident in May 2014, when the DfT announced consultation on *Traffic Signs Regulations and General Directions* (TSRGD), which includes crossings. DfT proposed that in future, Pelican crossings should not be installed – although existing crossings could remain. The strong support in the ensuing consultation of many middle actors, including several NGOs and two-thirds of local authorities, demonstrated the *middle-sideways* impact. In 2015, the DfT issued mandatory guidance that signalised pedestrian crossings installed in future must either provide a ‘countdown’ (Figure 2(b)) or be ‘Puffin crossings’(Figure 2(c): these utilise a camera that keeps the lights green for pedestrians and red for other traffic while anyone is still walking across the junction).[25]

Further *middle-up* impact was evident in the National Institute for Health and Care Excellence[26] *Guidance on Physical Activity and the Built Environment*, which recommended that local councils should ensure that pedestrian crossings allow adequate time for pedestrians to cross the road. In 2019, the Department for Transport (DfT)[27] published updated guidance, permitting the use of a lower walking speed (1.0 m/s) for signalised crossings where local authorities believe that will benefit local residents.

DISCUSSION

Main findings of this study

ASH promoted smoke-free legislation, and Living Streets promoted change to crossing times, by acting as: mediators between the public interest and decision-makers, and between various middle actors; aggregators, providing opportunities that amplified the voices of bottom and middle actors and made their demand more robust and visible; and enablers, proposing the evidence-based agenda as an alternative to the tobacco industry’s and car user lobbies’ agendas. Both NGOs increased the knowledge, interest and motivation of bottom and middle actors to actively engage in this domain and put pressure on decision-makers to act. They also increased the capacity of various, relatively small, diverse and widespread actors to act and present arguments to decision-makers at the top. The elevated motivation and capacity of top, bottom and middle actors facilitated the action.

Both case studies had the ultimate aim of changing national policy. In both, the main actions were sideways to multiply the effects of both middle-down and thus bottom-up, and of middle-up. Applying the MOP lens recognises the advocacy work that middle actors were uniquely positioned to lead in both these examples.

What is already known

Learning from past public health campaigns can help in planning effective strategies for future campaigns. Involving key organisations and creating networks and alliances are important strategies for effective public health action.[28] While such networks have commonly involved a wide range of health-relevant organisations and individuals,[29] the adoption of a Sustainable Development Goal hygiene indicator on handwashing resulted from NGOs, academics, and commercial organisations working together with traditional public health bodies to influence policymakers (middle-up), while implementation involves the same actors working middle-down.[30] Many would argue that this, and the MOP, is how public health works, and has always worked.

What this study adds

We suggest that using the MOP framework as a diagnostic lens and *formal* structure can assist public health professionals and others to identify the ‘missing middle actors’ and the interactions between them and other key actors. A more systematic approach would help in the design of advocacy or implementation strategies to achieve desired policy or behaviour changes and amplify the effectiveness of sideways, middle-up, middle-down, top-down and bottom-up activities.

The MOP can lead to public health practitioners stepping back and working in the background, leaving more overt action to others. While this low profile may be problematic for some individuals, or for justification of resources such as staff time, the goal should be the outcome in terms of the benefits for population health rather than the visibility of public health departments. Public health advocacy is a core skill of public health, yet the requisite skills and qualities are challenging, including familiarity with the evidence base and ability to effectively articulate key messages and relevant narratives to influence opinion leaders and the general public.[31] The process can also involve potential conflicts in the blending of science, politics and activism in the context of wider public interest, such as the different timeframes of politicians and outcomes of effective public health measures,[32] yet also has the power to deliver major systemic change. Legislation has a role reducing non-communicable diseases;[32,33] many recent public health laws that have been implemented were achieved through use of a middle-out approach, including banning tobacco marketing, plain packaging of tobacco, and nutrition labelling. In case study 1, the lead middle actor recruited a broad set of middle actors, including many who are not traditionally involved in public health work. In case study 2, most of the middle actors were more traditionally involved in promoting the health of the public. In both case studies, the lead actor was an NGO but that role may be taken by local government, public health bodies or departments, community groups, or others.

It should be recognised that those with opposing goals may also use a middle-out approach. For example, the tobacco industry involved the National Federation of Retail Newsagents and the Tobacco Retailers Alliance (membership organisations for newsagents and tobacconists) in opposing legislation to ban tobacco advertising[9] and the hospitality industry to oppose proposed smoke-free legislation.[22] Such efforts include apparent bottom-up activities using manufactured ‘grass-roots’ campaigns, referred to as ‘astroturfing’.[9] Many health-diminishing industries have used techniques trialled by the tobacco industry;[34] proponents of good health can also learn lessons.[9,35] The tobacco industry formerly, and the food and beverage industry more recently, have used a ‘sideways’ approach, involving national and international sporting bodies and individual clubs to promote unhealthy products to those attending or watching such sporting events (‘middle-down’).[36] It is not known whether these bodies also support their sponsors’ interests in a ‘middle-up’ fashion. Thus, despite valid concerns about engaging with directly health-diminishing industries,[34] public health organisations need to engage with the potential industry middle actors nationally and locally to promote health.

The United Nations (UN) Inter-Agency Task Force on the Prevention and Control of Non-communicable Diseases has called for increasing effective health-promoting partnerships with civil society and the commercial sector, giving due regard to managing conflicts of interests. These include stronger regulation and legislation to provide an environment that enables behaviours that promote health.[37] Much of this can be facilitated by taking a middle-out approach, which assists formal consideration of the broader range of organisations and groups that could be involved as allies. The MOP can also help with the systems thinking that is now recognised as crucial in improving population health.[10]

Limitations of this study

The main limitation is that the two case studies may not be representative. They were selected because we believe they illustrate the impact of middle actors. The MOP may be more or less applicable to other public health issues.

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CONFLICT OF INTEREST

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Is social capital higher in areas with a higher density of historic assets? Analyses of 11,112 adults living in England

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Abstract

Aims: Previous evidence suggests that engagement with heritage such as visiting heritage sites provides benefits for people's mental and social wellbeing, and helps to establish social capital. However, far less is known about whether living in areas of historic built environment also helps build social capital. Furthermore, it remains unclear how the association between historic built environment and social capital may vary across heritage engagement frequency and areas of deprivation levels. This study was therefore designed to explore the cross-sectional relationship between historic built environment and social capital.

Methods: Analysis was based on three datasets: Understanding Society: The UK Household Longitudinal Study Waves 5 (2013/2015) and 6 (2014/2016), 2019 National Heritage List for England, and 2015 English Index of Multiple Deprivation (IMD). Ordinary least squares (OLS) regressions were applied to estimate the relationships between historic built environment (listed buildings, scheduled monuments, and registered parks and gardens) and social capital (personal relationships, social network support, civic engagement, and trust and cooperative norms).

Results: We found that people living in places with greater historic built environment experienced higher levels of personal relationships, social network support, and civic engagement. However, these associations were attenuated once rurality was adjusted. Individuals living in areas of greater levels of historic built environment displayed higher levels of trust and cooperative norms, even after adjusting for all relevant covariates. Heritage engagement frequency was found to moderate the association between historic built environment and personal relationships. Similarly, IMD was also found to moderate the association between historic built environment and trust and cooperative norms.

Conclusion: These findings highlight the importance of neighbourhood environment in building social capital in communities. Particularly, areas with heritage assets may provide both socially inviting and aesthetically pleasing environments that could help strengthen community and restore pride in place.

INTRODUCTION

Heritage sites, including historic listed buildings, scheduled monuments such as Roman remains, castles, bridges, burial mounds, and the remains of deserted villages and industrial sites, and registered historic parks and gardens, are recognised as a valuable asset for individual and community wellbeing.[1] Evidence has suggested that heritage helps reduce levels of anxiety and mood disorder, provides a sense of pride, and creates opportunities for social integration and community engagement.[1] In England, there are over 400,000 list entries, 95% of which are listed buildings, 5% are scheduled monuments, and 0.4% are historic parks and gardens (those with a special historic interest or designed historic

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landscapes with outstanding importance and rarity).[1,2] These heritage sites receive substantial levels of engagement from the public, with around 74.5 million visits made to historic properties in England each year,[3] and over 7 in 10 adults and 2 in 3 children and young people visiting a heritage site at least once every 12 months.[4,5]

Engagement in heritage has been shown to provide benefits for people's mental and social wellbeing. For instance, research has found that engaging in heritage once a year to three to four times a year or more are associated with improvements in life satisfaction, greater mental health functioning, and reduced mental distress.[6–10] Moreover, heritage-based cultural activities in museums have been found to relate to positive emotions, a sense of empowerment and confidence, improved social connectiveness and interactions, and reduced social isolation.[11–13] Some potential key ingredients for the associations include new spaces for conversation and friendship to develop, a source of distraction from negative emotions, and inspiration and pride in artwork and craftwork.[13] Furthermore, visiting historic landscapes and parks have been shown to help enhance self-esteem and alleviate feelings of anger and depression.[14] Specific studies of interventions designed to connect people with heritage have shown similar results. For example, the Human Henge intervention, a programme designed to engage people living in England who experienced mental health problems with historic landscapes, was found to help improve their mental health wellbeing and connections with others ($N=35$).[15] Similarly, an intervention involving handling and discussion of heritage objects in hospital and healthcare settings (including acute and elderly care, residential, and psychiatric) in England found increased levels of positive affect, wellness and happiness, and reduced negative affect among older adults aged 65–85 with chronic conditions, anxiety and depression ($N=40$).[16] Mental and social wellbeing benefits of heritage involvement may also arise from volunteering in settings such as historic houses and gardens.[17]

In addition to these wellbeing benefits, other research has highlighted the effects of heritage engagement on social capital. Social capital is a multidimensional construct that can broadly be distinguished into three dimensions: structural, relational, and cognitive social capital.[18,19] Structural social capital refers to network ties and membership of or participation in party organisations, religious association, or other voluntary organisations. Relational social capital, on the other hand, refers to personal relationships and interactions which often involve shared history, respect, trust, obligations, identity, and emotional attachments. Finally, the cognitive dimension refers to shared norms, values, and interpretations.[19] These three dimensions are highly interconnected and are suggested to help facilitate cooperation and connections within community.[18,19] Various benefits of social capital have been identified. For instance, it has been found that, in Canada, trust in people and institutions such as the police, health care system, banks, and a strong social network of friends were associated with happiness.[20] A study on a Chinese population has found similar findings:[21] trust was positively correlated with self-reported general health, psychological health, and life satisfaction, while holding socio-economic and demographic characteristics in constant. This was possibly explained by emotional support, shared information on social and health services, and control of deviant behaviours. Notably, the effects of trust on life satisfaction were similar in size to the effects of household income (both with a beta coefficient of 0.3).[21] Moreover, it has been suggested that, while civic engagement membership in party-affiliated organisations was related to better self-reported general health, membership in voluntary organisations helped support better psychological health and improve life satisfaction.[21] On a community level, social capital is essential for neighbourhood development as it helps facilitate coordination and cooperation for community benefits and encourages civic actions within a community.[22,23] Conversely, a deficit of social capital can have compound negative effects of social and health inequalities as well as social unrest.[24,25]

In the past two decades, social capital has been one of the policy priorities in the UK across different disciplines, including public health, urban planning, economy, and community development. The role of it has particularly been highlighted in the recent 'levelling up' White Paper published in 2022,[26] which emphasises on improving living standards and quality of life, especially in more deprived areas, promoting equality and opportunity, strengthening community and local leadership, and restoring pride in place; all core components of social capital.[26] In seeking to build social capital, the place where people live becomes important as it can help create a social environment which enables and facilitates residents' interaction with other community members.[27,28] In particular, places with historic elements usually operate as cultural attractions, providing additional incentives for people to engage in face-to-face socialising, to connect with people from different cultural and socio-economic clusters, and to cultivate a stronger sense of place provided by its cultural distinctiveness and uniqueness.[29]

Previous research has identified three broad social and community benefits of heritage that help form social capital: (i) greater interactions between people through activities such as participating in heritage-type activities or engaging in other kinds of unrelated interactions such as dog walking, (ii) a deeper sense of collective identity and sense of place (e.g. sharing knowledge about the past), and (iii) enhanced levels of awareness and understanding of other community members and hence facilitate community cohesion.[30,31] However, most of the research to date has focused on heritage engagement (i.e. visiting heritage sites for days out). Far less is known about whether living in areas of historic built environment, where historic assets serve as a setting for daily community life, helps build social capital, even if one does not specifically set aside time to engage with specific heritage sites.

Indeed, existing literature has hinted that areas with higher concentration of heritage assets may produce a stronger sense of place, in addition to creating social environment that enables people to meet and interact, as they help provide the historic elements that define a neighbourhood character.[32,33] For instance, qualitative research findings from the UK and Poland with participants coming from a range of age and ethnic groups have shown that places with heritage characteristics provide a source of identity and local pride and can facilitate communal activities such as local field walking groups.[33,34] For some heritage assets such as monuments, historic markets, and heritage parks and gardens, they can act as a landmark for people to meet socially,[31] as well as facilitating social mixing in diverse communities.[2,33] Furthermore, heritage buildings with their intricate architectural styles and designed infrastructure provide visual aesthetic and sensory experiences that could lead to improvements in wellbeing,[35] as well as encouraging people to engage in outdoor recreation.[33] Leaving home offers opportunities for social encounters that could help maintain loose ties between neighbours and promote community integration.[33] These positive effects were also found in urban areas that were characterised by green areas and a predominance of historic properties, where residents reported greater neighbourhood satisfaction of walkability, feelings of safety, and less pollution and stress.[36] Finally, historic built environment may offer opportunities for residents to meet and contribute to decisions and active place-making, shaping collectively the character of the place they live with other members of their community (e.g. improvements in quality of shopping streets, regeneration and open spaces). This could encourage people getting involved in local activities such as fund raising, elections of planning representatives, and local archaeology projects.[32] A survey of over 2400 adults from YouGov (2017) has also revealed that people living in conservation areas are more likely to engage in development and planning decisions in their local areas than those living outside of them,[37] although it should be noted that the survey might contain self-selection bias.

However, historic built environment and its social impacts are likely to be geographically patterned, particularly in places where there are interventions and funding to develop local economic and tourism-related activities as well as regeneration programmes to help maintain those assets. Geographical factors are likely related to the socio-economic characteristics of individuals living in the catchment areas, the influence of those factors on people's cultural behaviours and social wellbeing such as deprivation and safety levels, and area-specific social processes such as social contagion and networks.[38,39] Yet it remains unclear whether the association between historic built environment and social capital varies across neighbourhoods, as has been reflected in other parallel studies, which found that the effects of heritage and culture engagement on mental health and life satisfaction might be more prominent in areas of higher deprivation.[6] Understanding how the impact of historic built environment may vary geographically has implications on urban planning and social policies, which aim to enhance social capital within communities facing barriers to development due to deprivation through existing place-based resources such as heritage and cultural buildings and infrastructures.

Therefore, this article explored three interconnected research questions (RQs):

RQ1. Is historic built environment associated with social capital (defined by four sub-scales: personal relationships, social network support, civic engagement, and trust and cooperative norms)?

RQ2. Is the association between historic built environment and social capital independent of, or moderated by, the amount that individuals engage with heritage (measured by frequency of visits)?

RQ3. Does the association between historic built environment and social capital vary by neighbourhood deprivation?

To address these RQs, we used three different datasets: (1) Understanding Society: The UK Household Longitudinal Study (UKHLS) Waves 5 (2013/2015) and 6 (2014/2016), (2) 2019 National Heritage List for England (the official, up to date, registration of all nationally protected historic buildings and sites in England [1]), and (3) 2015 English Index of Multiple Deprivation (IMD), and applied statistical regressions to estimate the cross-sectional relationships between historic built environment and social capital while accounting for potential confounding factors. This study focused on historic built environment in both urban and rural areas.

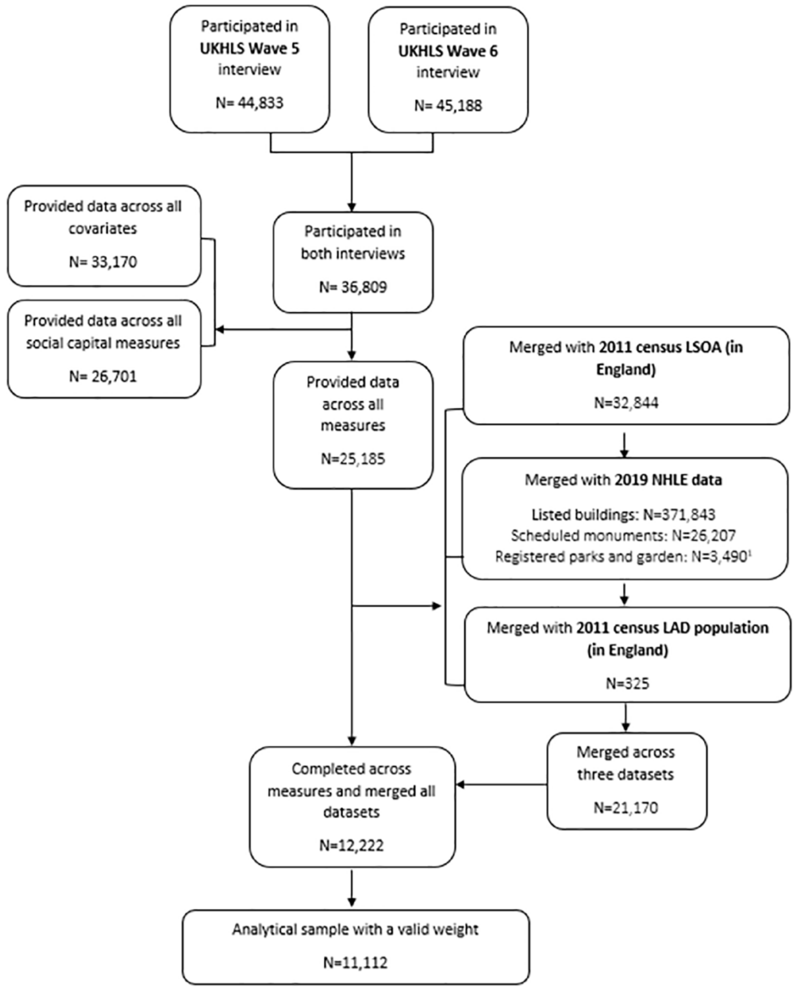
DATA AND METHODS

Data from the UKHLS follow over 50,000 individuals from 30,000 households annually and collect rich information about respondents' socio-demographics; community group engagement; social, mental, and physical wellbeing; as well as their relationships within neighbourhoods.[40] In this study, we extracted a sample of adults living in England who responded to both Waves 5 (2013/2015; response rate = 85%), where cultural and heritage engagements were measured, and 6 (2014/2016; response rate = 84%), where social capital was measured (N = 36,809). We only considered respondents providing data across all measures (N = 25,185).

To investigate the role of historic built environment, we used geo-coded UKHLS data in which participating households' addresses were matched to neighbourhood zones. Neighbourhoods were defined as 2011 census lower super output areas (LSOAs). LSOAs are designed for the consistent reporting of small area statistics in England and Wales. Using the 2011 LSOA geocodes, we attached the 2019 National Heritage List for England data on heritage assets, which provides geodata for all nationally protected historic buildings and sites in England. We used data from 2019 as the data were more maturely developed. Providing that these assets are historical, the historic built environment does not differ substantially within a decade. The data include battlefields, listed buildings (2.5% are listed as Grade I, 5.8% as

Diagram 1.

A flowchart of analytical sample. [1]The number exceeds the official number due to multiple entries as such assets often extend to more than one local authority districts (LAD) given the size of them. UKHLS: Understanding Society: The UK Household Longitudinal Study; NHLE: National Heritage List for England; LSOA: lower super output areas.



Grade II*, and 91.7% as Grade II), parks and gardens with historic characteristics, protected wreck sites, scheduled monuments, World Heritage Sites, and conservation areas. The database is official and regularly updated which indicates the exact location of the protected sites, buildings, and areas, as well as basic textual information across various fields, including the type of Grade for buildings and parks. More information can be found in Historic England[41] database.

In the present study, we considered three types of historic assets that are commonly found in local neighbourhoods: listed buildings (Grades I, II*, and II; *N*=371,843), scheduled monuments (*N*=26,207), and registered parks and gardens (*N*=3490; the number exceeds the official number due to multiple entries as such assets often extend to more than one local authority districts (LAD) given the size of them).[2]

In addition, to explore the role of neighbourhood deprivation, we further attached the 2015 IMD data, which use a range of input datasets to rank the relative deprivation of LSOAs across seven weighted domains: income, employment, health deprivation and disability, education, skill and training, crime, barriers to housing and services, and living environment. After matching, the number of survey participants was 12,222. A flowchart of analytical sample is indicated in Diagram 1.

Measures

Historic built environment

Historic built environment measured in 2019 was defined as the number of heritage assets (listed buildings, scheduled monuments, and registered parks and gardens) across LAD per thousand people and was categorised into five groups according to the data from the Heritage Indicators 2020 published by Historic England:[2] 0–1.4, 1.5–3.4, 3.5–7.3, 7.4–14.8, and 14.9+. Balance across these categories was achieved, making it suitable for subsequent analyses. The measure was used as a continuous measure given the normally distributed pattern across the five categories (Supplemental Figure S1).

Social capital

We considered four key aspects of social capital measured in 2014/2016: personal relationships, social network support, civic engagement, and trust and cooperative norms based on the UKHLS measures proposed by the Office for National Statistics.[42,43] For *personal relationships*, two measures were considered: number of close friends (a 6-point scale, ranging from 0 to 5+) and proportion of respondents who agree on regularly stopped and talked with people within neighbourhood (a 5-point scale, ranging from strongly disagree to strongly agree). These two measures were positively although weakly correlated (r = .12). They were combined to a single indicator and were computed additively with a range of 1–10.

For *social network support*, two indicators were considered: whether or not respondents provided special help to at least one sick, disabled, or elderly person living or not living with them (yes versus no), and whether people felt they could borrow things from neighbours (a 5-point scale, ranging from strongly disagree to strongly agree). To enable the measures to be more consistent, we collapsed the latter measure to binary:

agree/strongly agree versus neither/disagree/strongly disagree. These two measures were weakly correlated (tetrachoric correlation = 0.03) and were summed with a range of 0–2.

Regarding *civic engagement*, respondents were asked if they were members of organisations, whether political, voluntary, professional, or recreational (yes versus no), and whether they regularly volunteered (a 10-point scale, ranging from never to 3 or more days a week collapsed to binary: at least once a month versus less than once a month or never). These two measures were positively correlated (tetrachoric correlation = .53) and were then summed with a range of 0–2.

Finally, for *trust and cooperative norms*, three measures were considered: the extent to which people in the neighbourhood (1) could be trusted, (2) were willing to help their neighbours, and (3) felt sense of belonging in the neighbourhood. These measures were on a 5-point scale and were positively correlated (ranging from $r = .43$ to $r = .60$). They were computed additively with a range of 3–15.

Given that all four social capital variables were measured on different scales, they were subsequently standardised to have a mean of 0 and a standard deviation of 1.

A set of covariates that were shown important and relevant to social capital in previous empirical studies were considered in the model. They were all measured in baseline collected in UKHLS Wave 5 (2013/2015) and included age, gender (female versus male), ethnicity (white ethnic versus ethnic minorities), cohabitating status (living with a partner versus not living with a partner, including those who were single, divorced/separated, or widowed), employment status (employed versus not employed including the unemployed, retired, students, etc.), education (with degree versus without degree), total personal monthly gross income (including from labour, miscellaneous, private benefit, investment, pension, and social benefit; quartiles), presence of parent(s) in the household (yes versus no), presence of child(ren) in the household (yes versus no), and frequency of cultural attendance such as visiting a play/drama or a ballet performance (a continuous variable with a 5-point scale, ranging from none in the past year to at least once a month). We have additionally considered rurality defined in 2011 census LSOA identification codes in our models (living in rural areas versus not living in rural areas).

Analysis

RQ1: To understand the relationship between historic built environment and social capital, we ran a cross-sectional analysis using ordinary least squares (OLS) regression models. Given that historic built environment can be highly correlated with personal demographic and socio-economic factors (e.g. a preference for living in places with historical characteristics), the regression models were constructed sequentially to understand the changes of the association between historic built environment and each of the social capital measures. Model 1 was unadjusted. In Model 2, we additionally adjusted for demographic backgrounds: age, gender, ethnicity, cohabitating status, presence of parent(s) in the household, and presence of child(ren) in the household. In Model 3, we additionally controlled for socio-economic positions (SEP): education, employment status, income, and cultural attendance frequency. Finally, in Model 4, we further adjusted for rurality. As a sensitivity analysis, all models were repeated by restricting the respondents to those who did not move houses between Waves 5 and 6 interviews ($N = 10{,}490$) to account for potential changes in historic built environment exposure during the follow-up period.

RQ2: To explore whether the relationship between historic built environment and social capital was independent of heritage engagement frequency (a continuous variable with a 5-point scale, ranging from none to at least once a month), we repeated the analysis while additionally adjusting for levels of heritage engagement. To understand whether the relationship was moderated by the levels of engagement given that areas with more historical assets may attract more visits from the local people, we further included an interaction term (historic built environment × heritage engagement levels) in the analysis. Number of observations of each interaction cell is provided in Supplemental Table S1.

RQ3: Finally, to understand whether the relationship between historic built environment and social capital varied by levels of area deprivation (a decile scale, 1 being most deprived 10% and 10 being least deprived 10%), we tested the interaction effect (historic built environment × IMD) in our full model. Number of observations of each interaction cell is provided in Supplemental Table S2.

All models were weighted using inverse probability weights derived from Waves 5 and 6 weights supplied with UKHLS. These weights have been tailored to the analytical sample and should correct our estimates by taking into account differential sample selection and retention probabilities. Missingness was handled using list-wise deletion. This gives a core sample size of 11,112 (participants with a valid weight).

RESULTS

In our sample, the average age was 48 years. 52% were female, 93% were of White ethnic background, and around 64% of the participants were living with a partner. In addition, 14% of the respondents were living with at least one parent in the household and 29% living with their children. Around 3 in 10 respondents did not visit heritage sites in the past year (in line with the figure of heritage visits presented in the Department of Digital, Culture, Media & Sport 2019/2020 report [5]), whereas 1 in 10 visited at least once a month (Supplemental Table S3(a)). In general, the average age was slightly higher in areas with highly concentrated historic buildings (Supplemental Table S3(b)).

RQ1: is historic built environment associated with social capital?

Our results show that, after adjusting for demographic backgrounds and SEP, living in places with greater historic built

Table 1

OLS regression estimating the association between historic built environment and social capital ($N = 11,112$)

	Personal relationships			Social network support			Civic engagement			Trust and cooperative norms		
	Coef.	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**
Model 1: adjusted for historic built environment only	**0.05**	**0.03, 0.06**	**0.000**	**0.04**	**0.02, 0.05**	**0.000**	**0.04**	**0.02, 0.05**	**0.000**	**0.08**	**0.07, 0.10**	**0.000**
Model 2: Model 1 + demographic backgrounds	**0.03**	**0.01, 0.05**	**0.000**	**0.02**	**0.01, 0.04**	**0.006**	**0.02**	**0.01, 0.04**	**0.004**	**0.06**	**0.05, 0.08**	**0.000**
Model 3: Model 2 + socio-economic position	**0.03**	**0.01, 0.04**	**0.000**	**0.02**	**0.01, 0.04**	**0.005**	**0.02**	**0.01, 0.04**	**0.001**	**0.06**	**0.05, 0.08**	**0.000**
Model 4 (full model): Model 3 + rurality	0.00	−0.01, 0.02	0.617	0.00	−0.01, 0.02	0.663	0.02	−0.00, 0.03	0.059	**0.03**	**0.01, 0.04**	**0.003**

OLS: ordinary least squares; CI: confidence interval; SEP: socio-economic position.
Demographic factors included age, gender, ethnicity, cohabiting status, whether or not living with children, and whether or not living with parents. SEP factors included education level, employment status, total personal monthly gross income, and cultural engagement frequency. Rurality indicates whether respondents were living in rural areas. Bold values denote statistical significance at the $p < 0.05$ level.

Table 2

OLS regression estimating the association between historic built environment and social capital with an inclusion of heritage engagement level as both a covariate and moderator: not adjusting for rurality ($N = 11,112$).

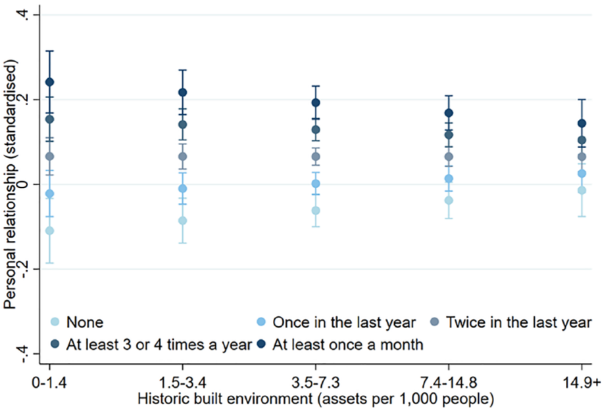
	Personal relationships			Social network support			Civic engagement			Trust and cooperative norms		
	Coef.	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**
Historic built environment	**0.03**	**0.01, 0.04**	**0.001**	**0.02**	**0.00, 0.04**	**0.011**	**0.02**	**0.00, 0.03**	**0.009**	**0.06**	**0.05, 0.08**	**0.000**
Interaction terms												
Historic built environment	**0.05**	**0.02, 0.08**	**0.001**	0.02	−0.01, 0.04	0.156	0.01	−0.01, 0.03	0.329	**0.07**	**0.04, 0.10**	**0.000**
Engagement level	**0.10**	**0.06, 0.14**	**0.000**	0.03	−0.01, 0.07	0.114	**0.08**	**0.04, 0.11**	**0.000**	**0.07**	**0.03, 0.11**	**0.001**
Historic built environment × engagement level	**−0.01**	**−0.02, −0.00**	**0.032**	0.00	−0.01, 0.01	0.853	0.00	−0.01, 0.01	0.396	−0.01	−0.02, 0.01	0.288

OLS: ordinary least squares; CI: confidence interval.
The models were adjusted for demographic factors, socio-economic position, and heritage engagement level. Bold values denote statistical significance at the $p < 0.05$ level.

environment was associated with higher levels of personal relationships (coef = 0.03, 95% confidence interval (CI) = 0.01, 0.04; beta = 0.04), social network support (coef = 0.02, 95% CI = 0.01, 0.04; beta = 0.03), and civic engagement (coef = 0.02, 95% CI = 0.01, 0.04; beta = 0.03) (Table 1; Model 3). However, these associations were attenuated after adjusting for rurality (Table 1; Model 4). Nonetheless, the association was maintained across all models for historic built environment and greater trust and cooperative norms (coef = 0.03, 95% CI = 0.01, 0.04; beta = 0.04) (Table 1; Model 4). Results were replicated when restricting the sample to those who did not move houses between the two interview waves (Supplemental Table S4).

Figure 1

Historic built environment and personal relationships by heritage engagement level



RQ2: is the association independent of, or moderated by, heritage engagement frequency?

Given that rurality appeared to have absorbed a large amount of variation in the relationship between historic built environment and social capital measures, we performed two sets of models: before and after adjusting for rurality. Before adjusting for rurality, historic built environment was positively associated with personal relationships (coef = 0.03, 95% CI = 0.01, 0.04; beta = 0.04), social network support (coef = 0.02, 95% CI = 0.00, 0.04; beta = 0.03), civic engagement (coef = 0.02, 95% CI = 0.00, 0.03; beta = 0.03), and trust and cooperative norms (coef = 0.06, 95% CI = 0.05, 0.08; beta = 0.09) even when accounting for the frequency of heritage engagement (Table 2). However, after considering rurality, the associations with personal relationships, social network support, and civic engagement were attenuated (Table 3). For trust and cooperative norm, the pattern was different. Historic built environment continued to relate to higher levels of the outcome even independent of heritage engagement levels and rurality (coef = 0.02, 95% CI = 0.01, 0.04; beta = 0.03) (Table 3).

When examining the interacting effects of historic built environment × engagement frequency, a moderating effect was found for personal relationships regardless of whether rurality was adjusted (coef = −0.01, 95% CI = −0.02, −0.00; beta = −0.07) (Tables 2 and 3). This suggests that the association between heritage engagement levels and personal relationships may be less salient for people living in areas with greater historic built environment, and that the differences in personal relationships between people with higher and lower heritage engagement rates may also be reduced in areas with greater historic built environment (Figure 1). In contrast, no moderating associations were found for social network support, civic engagement, or trust and cooperative norms.

RQ3: does the association vary by neighbourhood deprivation?

After adjusting for all covariates, we found a moderating effect of IMD on the association between historic built environment and trust and cooperative norms (coef = −0.01, 95% CI = −0.02, −0.00; beta = −0.14) (Table 4). The result suggests that differences in trust and cooperative norms between higher and lower levels of area deprivation may be reduced in areas with greater historic built environment (Figure 2). No moderating associations were found for personal relationships, social network support, and civic engagement.

DISCUSSION

This was the first study combining three different datasets, namely UKHLS Waves 5 (2013/2015) and 6 (2014/2016), National Heritage List for England (2019), and English IMD (2015), to examine the association between historic built environment and social capital. Our results show that people living in places with greater historic built environment experienced higher levels of personal relationships, social network support, and civic engagement, even after considering levels of heritage engagement, but these associations were attenuated once rurality was factored in. However, individuals living in areas of greater levels of historic built environment displayed higher levels of trust and cooperative norms. This relationship was persistent irrespective of demographic factors, SEP, rurality, and the amount of people engaging in heritage activities. Furthermore, differences in trust and cooperative norms between higher and lower levels of area deprivation were lower in areas with greater historic built environment, yet caution should be taken given that areas that are densely packed with historic assets also have lower levels of area deprivation.

The results are in parallel to previous studies which explored the association between historic built environment and social capital.[32,34] In particular, we found

Table 3

OLS regression estimating the association between historic built environment and social capital with an inclusion of heritage engagement level as both a covariate and moderator: adjusting for rurality ($N = 11,112$).

	Personal relationships			**Social network support**			**Civic engagement**			**Trust and cooperative norms**		
	Coef.	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**
Historic built environment	0.00	–0.02, 0.02	0.898	0.00	–0.02, 0.02	0.822	0.01	–0.01, 0.03	0.199	**0.02**	**0.01, 0.04**	**0.008**
Interaction terms												
Historic built environment	0.02	–0.01, 0.05	0.106	0.00	–0.03, 0.03	0.974	0.00	–0.02, 0.03	0.814	**0.04**	**0.01, 0.07**	**0.021**
Engagement level	**0.10**	**0.06, 0.14**	**0.000**	0.03	–0.01, 0.07	0.107	**0.08**	**0.04, 0.11**	**0.000**	**0.07**	**0.03, 0.11**	**0.001**
Historic built environment × engagement level	**–0.01**	**–0.02, –0.00**	**0.029**	0.00	–0.01, 0.01	0.878	0.00	–0.01, 0.01	0.405	–0.01	–0.02, 0.00	0.260

OLS: ordinary least squares; CI: confidence interval.
The models were adjusted for demographic factors, socio-economic position, heritage engagement level, and rurality. Bold values denote statistical significance at the $p < 0.05$ level.

Table 4

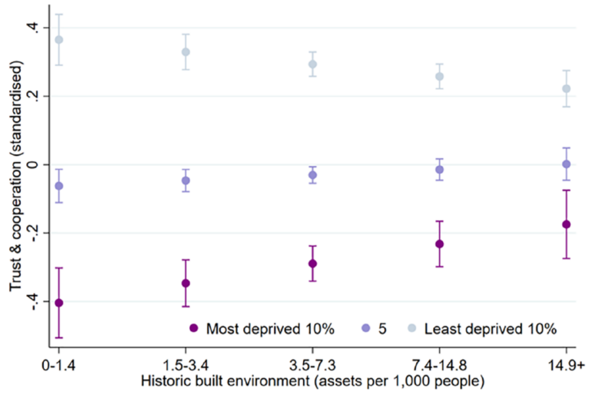
OLS regression estimating the moderating effect of levels of area deprivation on the association between historic built environment and social capital ($N = 11,112$).

	Personal relationships			**Social network support**			**Civic engagement**			**Trust and cooperative norms**		
	Coef.	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**	**Coef.**	**95% CI**	***p*-value**
Interacting with IMD												
Historic built environment	0.02	–0.02, 0.07	0.293	0.01	–0.03, 0.06	0.529	–0.00	–0.04, 0.04	0.920	**0.07**	**0.02, 0.12**	**0.008**
IMD	**0.06**	**0.04, 0.08**	**0.000**	0.01	–0.01, 0.03	0.278	0.01	–0.00, 0.03	0.129	**0.10**	**0.07, 0.12**	**0.000**
Historic built environment × IMD	–0.01	–0.01, 0.00	0.093	–0.00	–0.01, 0.00	0.540	0.00	–0.00, 0.01	0.666	**–0.01**	**–0.02, –0.00**	**0.003**

OLS: ordinary least squares; CI: confidence interval; IMD: Index of Multiple Deprivation.
The models were adjusted for demographic factors, socio-economic position, and rurality. Bold values denote statistical significance at the $p < 0.05$ level.

Figure 2

Historic built environment and trust and cooperative norms by deprivation level



that the effects of historic built environment on personal relationships, social network support, and civic engagement might be partly explained by rurality of the areas. Previous studies have provided evidence that people are happier, more supportive, and trusting if there is green space in the neighbourhoods,[44,45] suggesting that physical attributes of places play a role in people's social wellbeing. This could be explained by the correlation between exposure to green space and healthy behaviours such as walking, community gardening, and cycling.[46,47] These behaviours may provide opportunities for residents to interact with their neighbours and to engage in social activities with them, which in turn facilitates relationships within local communities, and increases senses of neighbourhood safety and trusting. There was also some evidence that when comparing a predominately built-up area with historic and green elements and an urban park, their effects on participants' affective and restorative outcomes were similar,[48] supporting their development in social capital. Yet areas with historic sites and characteristics may additionally facilitate community belonging and identity. Indeed, environmental psychologists have acknowledged the significance of both physical environment and people's perceptions of and experiences in the environment, such as place attachment,[49] and heritage assets may help enhance positive perceptions and experiences.[1]

However, our findings also indicated that rurality may not explain fully the association between historic built environment and all types of social capital. We found that historic built environment was significantly associated with greater levels of trust and cooperative norms even after considering rurality and heritage engagement. One explanation for this could be that, in addition to social environment, historic built environment also provides an aesthetically pleasing environment for people living in the catchment area to engage more in outdoor activities with a perception of safety and hence increase social interactions within the area.[50,51] Additionally, the historically and culturally meaningful experiences for residents living in historic neighbourhoods may contribute to intercultural understanding and development of trust between groups from diverse backgrounds.[31,52] On a related note, places with heritage characteristics may also provide a sense of uniqueness and place attachment through shared historic roots.[1,31,53] In addition, historic built environment could provide a vehicle for the local community to collaborate and work together on projects about the historic assets in the area.[1] For instance, a case study in Bellingham Heritage Centre showed that a group of local volunteers ran multiple projects in preserving local buildings and artefacts. This has attracted schools close by to visit the Heritage Centre every year for young people to understand more about their local area and heritage, and has attracted funding to support the Centre's continued development[1] and create a cultural pole for the area. This suggests that people living in areas of greater historic built environment may be more likely to be exposed to community activity opportunities that help strengthen their sense of belonging and form social capital.

Our study additionally explored whether the association between historic built environment and social capital varied by levels of heritage engagement and area of deprivation. We found that, for instance, the differences in personal relationships between people with higher and lower heritage engagement rates may be reduced in areas with greater historic built environment. Particularly, among those who did not engage in heritage, their personal relationships increased as historic built environment indexes increased. In contrast, people who engaged at least once a month may have poorer personal relationships if they lived in areas with highly concentrated historic buildings (versus areas of less concentrated historic buildings). Similar patterns were found for the relationship between historic built environment, area of deprivation, and trust and cooperative norms, where historic built environment may have a positive effect on the social outcome in more deprived areas but a negative effect in less deprived areas. Several factors may explain this. Historic built environment places are likely to attract tourism (especially in affluent places with well-maintained historic buildings and infrastructures) that may interrupt the formation of social capital for local residents.[34] For instance, for people who engage in heritage regularly, it is possible that mass tourism may have led to the loss of symbolic meaning of heritage assets and thus taken away the sense of pride and uniqueness of the areas from the local community residents.[34] In addition, the costs and benefits from heritage-related tourism may not necessarily be equally distributed. It is plausible that while some community members may enjoy the benefits tourism brings such as income, others may suffer from the costs of it such as restricted use of historical public space for local recreational use.[34] The unequal distribution of benefits may worsen the relationship among community members.[34] However, for people who never or rarely engaged in heritage or for people living in more deprived areas, living in places of historic built environment may enable them to increase satisfaction of their neighbourhood, to feel safe, and thus to participate more in outdoor activities where they could interact with other community members.[36] They may also benefit from the aesthetic experiences which provide a therapeutic effect for residents to support and maintain their wellbeing,[35] making it easier for them to initiate communications with neighbours. Such findings have potential policy implications relating to the ‘levelling-up’ agenda, in which the government could make use of the existing heritage sites and infrastructures (e.g. launching upskilling projects such as heritage conservation or education projects, or investing in long-term heritage-led regeneration projects) to support the development of trust and cooperation among people living in more deprived areas who often have fewer cultural opportunities,[54] while looking to build the sustainability of areas already experiencing high levels of tourism.

This study has a number of strengths, including the use of nationally representative survey data merging with nationally listed historic assets data provided by Historic England and 2015 English IMD, which enabled an investigation about the role of historic built environment while controlling for important variables such as heritage engagement (measured by number of visits made to historic assets) and rurality of the living area. However, the study is not without limitations. While our analysis involved estimating the levels of historic built environment of participants’ living areas, we were not able to control for participants’ residential preferences on their interests in history. It is possible that participants who were interested in heritage might choose to reside in areas of greater historic built environment and hence were likely to form social connections with others who shared the same interests. Furthermore, although we have avoided bias relating to people’s understanding and perception of ‘historic environment’ by objectively estimating the density of historic assets across local authority districts, we were unable to take into account the quality, value, and function of those assets.[31] For instance, preferences to use such assets may be affected by levels of maintenance and physical condition of those assets. Future work is required to further explore the quality, in addition to quantity, of heritage sites and infrastructures.

While our study considered heritage sites commonly found in local neighbourhoods, sites that were not nationally protected (e.g. traditional houses or buildings within conservation areas that are not listed) were not included in the analysis due to data complexity which might be prone to measurement errors.[55] Moreover, our measures for social capital may reflect more on bonding social capital (i.e. social connections between individuals who share similar values, norms, demographic backgrounds, attitudes, personal characteristics, etc.) than bridging social capital (i.e. connections between individuals who are dissimilar in relation to background and characteristics). Future research is required to explore whether historic built environment also helps facilitate bridging social capital. Finally, we only considered participants whose household LSOAs were matched to the LSOAs of heritage sites. This means that individuals who lived in proximity to those sites but not in exact LSOAs might have a different level of historic built environment compared to those who matched successfully. More sophisticated geographical data analysis that takes into account of the distance between residential areas and heritage assets is needed. Further research is also required to better examine whether people living in the catchment area were likely to engage in heritage locally or whether they might travel to different neighbourhoods where more heritage resources and opportunities were more readily available.

CONCLUSION

There is a growing consensus that social capital helps communities to thrive and to be more resilient, and that heritage may help build social capital. Overall, our study shows that living in areas of greater historic built environment helps improve personal relationships, social network support, civic engagement, and trust and cooperative norms, with some of the associations potentially being explained by rurality of the area (which has also been shown to provide opportunities for the development of social capital). Furthermore, the associations between historic built environment and personal relationships and trust and cooperative norms may be moderated by the rate of heritage engagement and neighbourhood deprivation, with people with lower engagement rate and those living in more deprived areas may benefit more from living in areas with higher historic built environment levels. These findings highlight the importance of neighbourhood environment in building social capital in communities. Particularly, areas with heritage assets may provide both socially inviting and aesthetically pleasing environments that could encourage outdoor and social activities, providing opportunities for interactions with neighbours, facilitating learning and discussions around shared heritage locations, as well as supporting joint civic action in projects around heritage in the area. These activities could help enhance a sense of belonging and trust in neighbourhood. For individuals living in areas with low levels of historic built environment, it is crucial to ensure that they have equal access to historic assets (e.g. through local trips, reduced entrance fees in paid sites, or promoting family and group visits for infrequent visitors). The local communities and councils are also encouraged to share knowledge on the historic background and character of the area to strengthen neighbourhood connections and trust through a shared sense of history and roots (e.g. London Underground has been displaying its heritage in recent years to yield public interest in the tube history), with additional avenues to individual and community wellbeing improvements.

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AUTHOR CONTRIBUTIONS

H.W.M. conducted the data management, data analyses and provided input on the manuscript. E.G. and D.F. assisted with analytical issues, and provided input on the analytical scheme and the manuscript. All authors are responsible for reported research and have participated in the concept and design, analysis and interpretation of data, and drafting and revising of the manuscript.

AVAILABILITY 0F DATA AND MATERIALS

UKHLS data is available from the UK Data Service. Understanding Society: Waves 1–10, 2009–2019 and Harmonised BHPS: Waves 1–18, 1991–2009 are available at https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=6614.

Understanding Society: Waves 1–10, 2009–2019: Special Licence Access, Census 2011 Lower Layer Super Output Areas are available at https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=7248.

Index of Multiple Deprivation data can be obtained from https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015.

Data from the National Heritage List for England (NHLE) is available at:

https://historicengland.org.uk/listing/the-list/data-downloads/

https://historicengland.org.uk/content/heritage-counts/pub/2021/discovery-identification-understanding-2021/.

CONFLICT OF INTEREST

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

The University of Essex Ethics Committee has approved all data collection on Understanding Society main study and innovation panel waves, including asking consent for all data linkages except to health records. Respondents aged 16 or above provided written consent to participate.

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SUPPLEMENTAL MATERIAL

Supplemental material for this article is available online.

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